

FAST TRACK

KEY IMPRESSIONING
The FAST and FUN Way



by G. Robertson
& LockPickersMall.com

FAST TRACK KEY IMPRESSIONING

The Quick Way to Build Impressioning Skills

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FORWARD

Some things never change.

We live in a highly sophisticated, super-tech, Twenty-First Century World – a world in which nearly everything old simply loses relevance and gets banished to history, or finds a different kind of value in being nostalgic.

Even in the locksmithing industry, recent technological advances have taken over certain segments. The “high security” segment, in particular. More and more, government, military and highly competitive industry is replacing old-fashioned pin tumbler lock security with devices that twenty years ago would have been commonplace only in science fiction/fantasy stories.

Retina scan lock technology; fingerprint scanners; card readers (which by now are already heading for the “has-been” pile) – all these are slowly taking their place at the very top of the tech pyramid.

Yet, strangely enough, there are very few locksmithing skills or procedures that have gone into retirement. Locksmiths still pick locks the same way they did ages ago because the basic lock design – that used in the majority of homes and buildings even to this day – has not changed. Locksmiths still cut keys with machines that, while having been modernized over the years, still use electric motors and simple mechanical devices. A good many practicing locksmiths still rely heavily on the sale and installation of pin tumbler lock hardware (and even fairly low tech wafer locks), and they do a vigorous business selling pin tumbler padlocks.

Okay, *some* old time processes are pretty much a thing of the past. Way back when, before the advent of pin tumbler locks as we know them, warded locksets ruled. They were the “high tech” locks before Linus Yale, Sr. and his son (Jr.) improved upon an ancient Egyptian design to give us the modern pin tumbler lock. That was a different era in which locksmiths had to be blacksmiths, too, because they created both lock and key from raw stock – mostly by hand. I wouldn’t be surprised if there were a few craftsmen out there that still keep that tradition alive, but if they do, it is not because there is still a demand for it.

Modern (a word that is so relative to the times it is mostly useless) – modern locks use flat brass or nickel plated brass keys and these lend themselves well to the art of impressioning.

This does not include pin tumbler or wafer cylinders that take advantage of more recent innovations, resulting in what we call “pick resistant” or “bump proof” locks.

While it may not be *impossible* to do so, the process of conventional key impressioning is not a good fit to make keys for these more advanced designs.

I would almost be willing to bet that leaves at least 99% of the remaining locks in this world as good candidates for key impressioning. Not too bad.

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SUPER Fast Track Key Impressioning

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Impressioning: What Is It?

There are numerous ways to create a working key for a lock. Obviously, if you already know the combination (the specific key cuts needed to operate the lock) the most direct method is to cut the key accordingly using either a code cutting machine or a manual code punch machine. A second option, in the absence of code cutting equipment, would be to disassemble the lock, if possible, and decode the existing combination or dump the pins or wafers and start fresh. There are scenarios in which you will not have this option. If you are dealing with a lockout situation, where you have no way to take the lock apart without destroying or damaging it, disassembly is not possible.

You may be able to pick the lock, or use bump keys, to open the door and then deal with creating a key by disassembly. But what if the lock resists picking or bumping for whatever reason? This can happen even to seasoned locksmiths who are very adept at lock picking.

There are, in fact, a great many practitioners who prefer to use impressioning rather than disassemble and decode even if they have that option open to them. These are generally locksmiths who like to keep one foot firmly in the Traditional – men and women who enjoy using a skilled and honored approach and who frankly like the challenge.

In a nutshell, impressioning is a method of originating a working key for a lock in which you begin with a prepared key blank and end up with an approximated but workable key. I say “approximated” because a file is used in creating the key (normally, but not always) so the actual cuts will not be perfectly formed, nor will it be perfect in terms of its cut depths. But the key will turn the lock without damage, and it can be used to determine the exact “factory depths” so a proper, machine-made key can then be created, if desired. In most cases the impressed key is perfectly suitable for use as is.

During my long career as a Professional Locksmith I most often used my HPC code cutting machine, which was part of my service vehicle setup, to actually create each incremental cut while impressioning, rather than use a file. This way, I ended up with a perfectly cut key. The procedure worked well if I could park my service van within a reasonable walking distance of the lock to be serviced. I would get my marks on the key blank, walk to the van, cut down each position that had marks exactly one increment (the actual depth determined by the lock brand or keyway), and repeat. It worked wonderfully for those older Ford vehicles that used pin tumbler ignition and door locks, but the days of being able to impression vehicle locks are mostly in the past.

The key blank is the first thing to consider. First off, it is a good idea to explain what a key blank is for those of you who may be new to this subject. You see them hanging by the dozens in hardware stores at the counter where key duplication is

offered, and of course every locksmith shop in the world has walls literally bristling with them.

A key blank is simply an un-cut key, of the proper shape and length for the particular lock in which it will end up working. The blade of a key blank has no cuts on it at all – it is flat. There are literally thousands different “key profiles”, a name locksmiths use to identify specific types of key blanks. I’d say only 5 or 6 of these profiles will ever be useful to you unless you enter the industry as a pro and begin dealing with commercial lock hardware. Even then, you’ll likely deal with no more than a dozen or so. Many of the other key profiles are relevant only to master keyed systems and you’ll almost certainly never have to try and impression with them.

The most common household key profiles include:

Kwikset
Schlage
Yale (original keyway)
Weiser
Master Padlock

In addition to the above pin tumbler lock profiles, we will be dealing with one wafer style lock that used to be commonly found on desk drawers. It is a low-to-medium security key profile and it is still available in most hardware stores as a general purpose drawer lock. It typically uses one of two common blanks, both of which are strictly for locks that have wafer tumblers: B1 or Y11. I will explain the difference between pin tumbler and wafer tumbler locks further on.

A good many household locks with various brand names are using the Kwikset keyway as this has become the most often used keyway in this country. Schlage is also a keyway found on a good many minor brands. You should have a dozen or so (minimum) of each of these key blanks with you if you are called to impression a lock so you can try each one in the lock to determine the proper blank to start with. After a very short while you’ll be able to identify the proper blank just by looking at the shape of the keyway in the lock.

Of course, while learning, you’ll already know which blank to use because you’ll be working on a known brand and you’ll know which blank it calls for.

So, we begin with a key blank, and in this tutorial we are going to start with a Y11 blank which you can buy at any hardware store or locksmith shop. You can also get them online but you usually have to buy 10 at a time. That’s not a bad idea, anyway, because we need a few in case we mess up a couple (or 9) of them! Here is an image of a Y11 key blank:



As with all key blanks, the blade of the key has no cuts to begin with. We'll start with this blank because it is commonly used for low security desk drawer locks, cabinet locks and other such applications and these locks are much easier to impression than are pin tumbler locks. Makes sense to begin with something that won't give you fits, right? Also, one of the reasons wafer type locks impression so easily is that they tend to leave distinct, unmistakable marks whereas pin tumblers can sometimes refuse to leave much more than the hint of a mark until your cut is quite close to the right depth. This varies with the lock and is affected by its condition and its age.

This is a good time to differentiate between pin tumbler and wafer tumbler locks. Just what *is* the difference, anyway?

Without going into brain-paralyzing detail, I can say that the two types simply make use of two very different kinds of tumblers and that there are many varieties of each out there. For purposes of instruction, only the basic varieties of each will be discussed here: Those varieties most often encountered on a day to day basis.

Wafer locks use a different kind of "tumbler" than does a pin tumbler lock. There are usually from 4 to 6 wafers within the lock. Each wafer is identical to its neighbor in that it is made of quite thin, flat brass and it has a basically rectangular shape. These wafers slide up and down in grooves that are cut in the interior walls of the plug (the part of the lock that accepts the key – it rotates within a "shell" which forms the outer part of the lock).

Each wafer is driven by a miniature spring which also resides in the same groove as the wafer. The spring is designed to force the wafer either upward or downward (in locks that use single sided keys the direction is the same for all wafers, in those that require keys with cuts on both top and bottom of the blade, every other wafer is driven upward while the remainder are driven downward). What this does is prevent the plug from rotating. While the wafers are quite thin, they are nonetheless sufficiently strong – especially in number – to resist a good deal of turning force. The force will definitely damage the wafers by deforming their shape, but this will only jam the plug that much more severely.

Each wafer has a rectangular opening in its center which allows the blade of a key to pass through. The key blade, as it is introduced into the lock, pushes against each wafer, forcing each to move up or down within its groove to allow the blade to enter. When the key has been fully inserted, each wafer is held against the key blade by the action of its spring. If the key is a blank, with no cuts, all the wafers will be protruding up beyond the level of the plug. In other words, there will be no shear line formed. A similar thing happens if the key inserted is cut in such a way that it does not match the combination formed by the wafers – in other words, it is the wrong key.

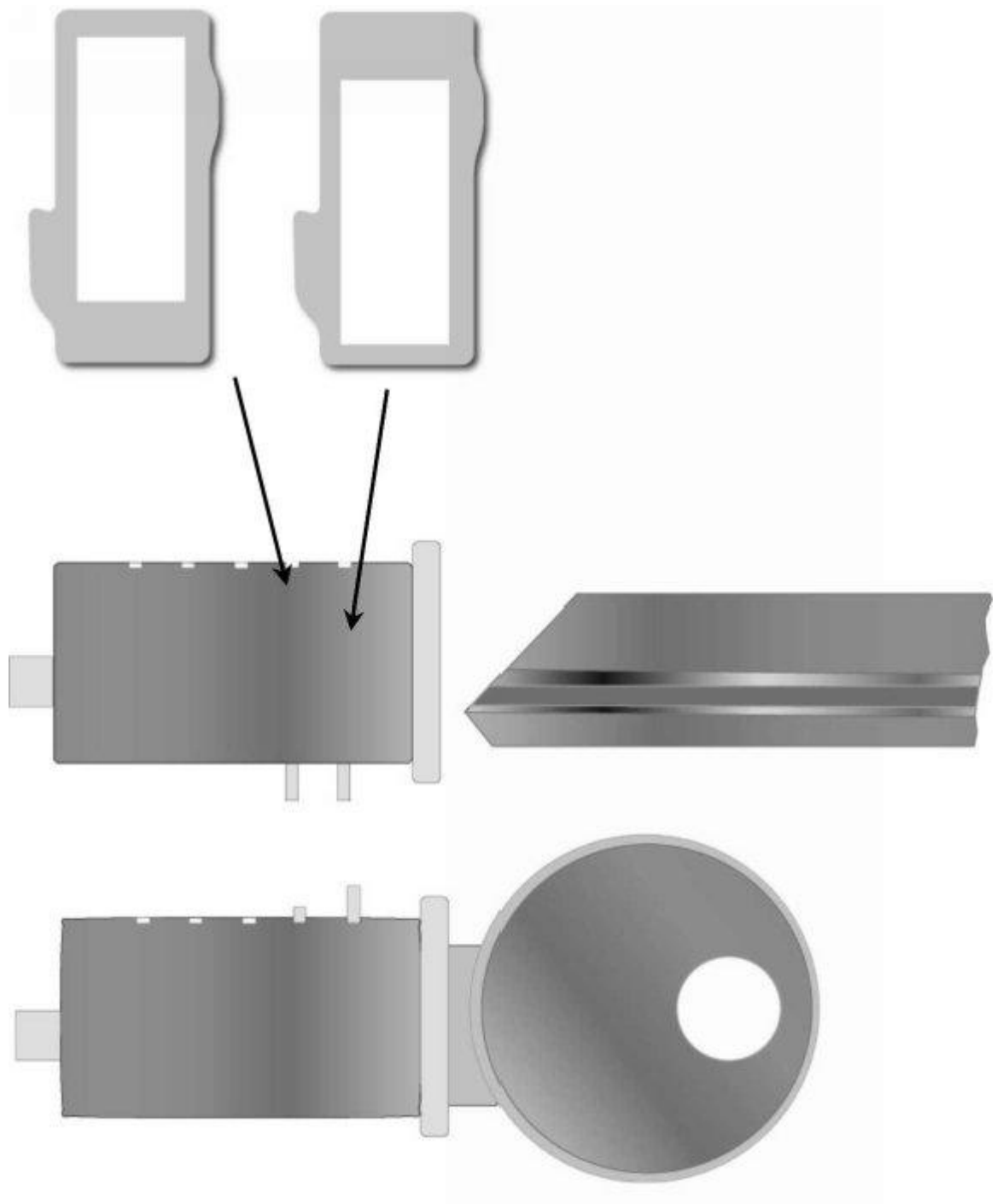
Now, if you've been able to visualize the description above, you'll note that the wafers will all be pushed to the same height by the key (assuming for now it is an

uncut blank). If all the cuts in the key were the same depth, say a #2 depth, all the wafers would still be at the same height relative to each other but that height would be different than if the key had no cuts at all. But we want the lock to accept keys that have varying depths in the combination, so how does that work?

It's really a simple but ingenious solution: Each wafer has a rectangular "window" cut in the center, as described previously, but these windows will vary as to their relative vertical position from wafer to wafer. It is this variation in height that makes it possible to create different key "combinations".

The illustration on the next page should make this a little easier to understand. Note that I have drawn two wafer tumblers. They are not in scale to the two drawings beneath them, obviously. The lower drawings illustrate the plug of a common wafer-style lock – in this case it would be a cam lock. The illustrations depict the same plug; the upper drawing with the key removed and the lower drawing with a key blank inserted.

Also note that the three wafers that would normally reside in positions 3 through 5 have been removed from the plug as the illustration will attempt to make my point using only two wafers, each with a different depth value.

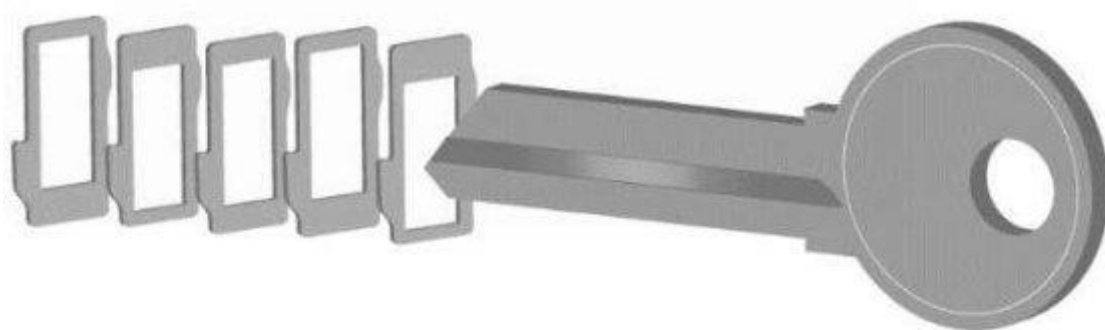


When there is no key in the lock plug, the springs within the plug push the wafers downward so that they protrude out the bottom of the plug. If the plug were inside the shell – which has a shallow groove cut into it that allows the bottom part of the wafers to extend into it – the plug cannot rotate. Without a key, the wafers extend out the bottom to the same, uniform level regardless of the variations in the wafers as to the cut depth.

The lower of the illustrations shows what happens when a key blank is inserted. The two wafers are pushed upward by the blade of the key and the springs assure that the wafers stay in firm contact with the blade. The two wafers have been raised to different heights because the position of the “window” for each wafer is different than its partner’s. In this case, wafer #1 (the front-most wafer or pin will always be the number 1 tumbler) has a window that is quite a bit lower on the wafer than wafer #2. Because the opening, or window, is lower, the blade of the uncut key pushes that wafer higher.

The next image illustrates how a key, or this case a key blank, engages a row of wafers within the plug. It actually fits right through them, passing through the window in the center of each wafer until it is seated all the way into the lock (most keys have a “shoulder” just in front of the head which serves as a stop when it abuts against the front of the lock).

The same image shows something else. Note that there is a mix of depth values here. If we assume that this particular brand of cam lock uses 4 depths, the first wafer (the one on the far right in this image) would be a #4 – the deepest cut this type of key would have. Take a look at the illustration and we’ll continue:



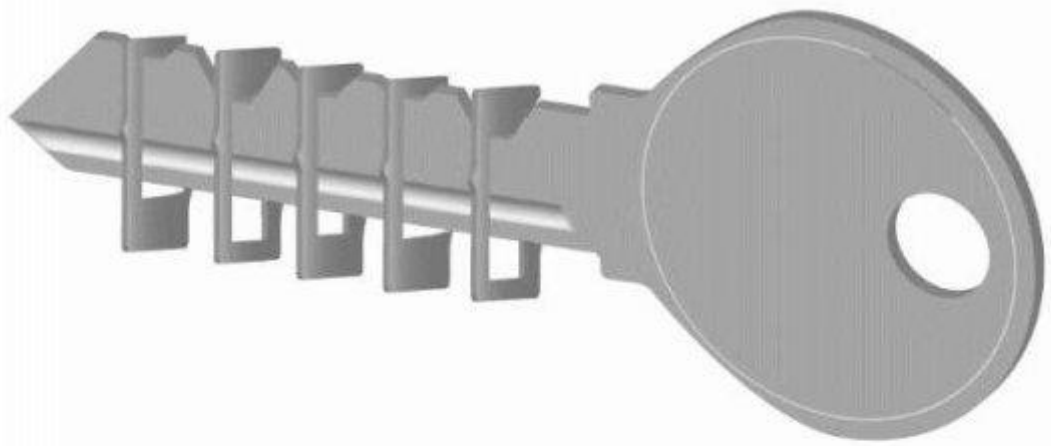
Downloaded from <https://www.cambridge.org/core>. University of Cambridge, on 01 Jun 2020 at 10:00:00, subject to the Cambridge Core terms of use, available at <https://www.cambridge.org/core/terms>. <https://doi.org/10.1017/9781009054050.003>

It's clear that when the key blank is inserted, the blade of the key pushes the first wafer up higher than it will push the second, third and fourth wafers. In this wafer combination, positions number 1 and number 4 are both #4 cuts. The image on the bottom of the illustration shows that the wafers in those two positions reach the same height when the blank is fully inserted into the plug.

Note, too, that positions number 2 and number 5 both share the same depth value: A #1, the most shallow depth for this type of key. So, the wafers in those positions, in the bottom drawing, similarly reach exactly the same height with the key inserted. To complete the explanation of this particular combination, position number 3 is actually a #2 cut. We would identify this lock's combination, starting from the front of the lock as required, as a 4-1-2-4-1. In any case, it's easy to see that the plug, if it were in its shell, would not be able to rotate.

So, with a blank inserted, the plug cannot rotate. It is this fact that enables us to impression our key.

Once we have a correctly cut key, each bitting (or cut) in the key will correspond properly to the wafer it engages when pushed all the way into the lock. Take a look at the illustration on the following page. Note that I have shown the wafers as they would engage the key but I've removed them from the plug to make it easier to comprehend.



The drawing on the bottom reveals that this correctly cut key aligns each wafer with the smooth surface of the plug, creating a “shear line”. This allows the plug to rotate within the shell of the lock, and therefore allows the lock to be unlocked or the latch turned or whatever job this cam lock will be made to do.

So how in the world do we end up with this correctly cut key? It’s not that hard, especially when working with simple wafer locks like this and that is why we are beginning with them. The thinness of the wafers will work in our favor and leave marks on the key blade that are generally very easy to recognize.

Impressioning gets its name from these marks that appear on the key blank. The process is straight forward and uncomplicated, but it does take some patience. The more wafers (or, in the case of pin tumbler locks, tumblers) there are in the lock to be impressioned, the more time it will take. Likewise, locks with close tolerances (in other words, the better quality the lock) the more difficulty there will be in both obtaining marks and recognizing them when they appear.

First off, we’ll need some way of holding the key blank firmly. You can’t impression a lock holding the key in a finger-tight grip unless you are bionic. Most people simply use good old Vise-Grip® pliers. They are found in most every hardware store in existence, or some similar tool with a different brand name. Yes, they will leave teeth marks on the head of the key but you’ll probably make a cleaned up copy of the working key once you complete the job, anyway. If you are servicing a lockout, your customer will be way too happy getting the lock open to raise a stink about a few marks on the head of the key. The small version of this tool should suffice, though when we graduate to impressioning pin tumbler locks you may want the larger size.

Once clamped firmly in the jaws of the Vise-Grips®, with the blade of the key facing upward (almost all locks are installed with the tumblers/wafers at the top so we’ll need the key blade facing upward), we’re ready to go.

But, wait . . . let’s not get ahead of ourselves. There are a few things to figure out before we jump in with both feet.

Ask Yourself a Few Questions

Question 1 – To Use Or Not To Use

Some will tell you to use lubricant before beginning. I say, “no”. No, I say, “NO!!!” What we want is friction, not slippery-sliding. It is friction that helps get those clean, clear marks. If your key or the keyway has been flooded with lubricant, not only will you have more trouble getting marks but you’ll also have a helluva time seeing them. At least that’s my experience. Answer: We’ll pass on that.

Question 2 – Be Prepared Or Not So Much?

Since we want to give ourselves the best possible chance of getting marks, we really should prepare the key before we begin. It's the right thing to do. If you look at the edge of a key blank's blade, you'll see it is anything but smooth. Thousands of tiny little dimples and squiggles appear on the surface along the edge and every one of them will work to hide your marks. This is especially true when we get into impressioning pin tumbler locks.

So, we need to "dress" the key. Maybe a better term would be "un-dress" because we want to remove material, not put it on. For this we turn to the same instrument that will eventually create the cuts, or bittings, in our key: The file.

Question 3 – How Sharp Is Your Eyesight?

Regardless of your answer, I say it's ten times easier to use a magnifier than it is to go au naturel. I've always used one. A good, clean, cheap pocket magnifier is easy to use, easy to store and carry, and it will make things easier. Get one of those illuminated numbers if you can find one – nothing better for working in dark and dingy spaces or at night even where it isn't dark and dingy.

Question 4 – How Much Can You Curl?

The answer to this question is, "it doesn't matter", because you don't need much more strength than it takes to shake someone's hand if you're doing it right. Yes, you will have to jiggle and twist and in some cases jack the key blank in the keyway in order to get the marks to guide you in the filing of the key, but in few cases will this require anything even approaching brawn. In fact – and this is particularly true at the beginning when you'll be working with small keys, small locks and your own tendency as a beginner to put too much muscle into it – using brawn will usually result in breaking the key off in the lock. Not cool. Fishing broken key blades out of locks is one of locksmithing's most detested chores. Use firmness, but not forcefulness.

We'll sort all this out soon enough, with our first practice session, but for right now I want to complete the answer to the "Impressioning, What Is It?" question posed at the beginning.

To end up with a working key, it is simply a matter of using an impressioning tool (I'm recommending Vise-Grips ®), an impressioning file (which I will detail in a moment), and a key blank to gradually file down each position on the blade of the key until you have succeeded in producing a working key. Each position (each place on the key blank where a wafer or pin tumbler makes contact) has to be filed incrementally, taking just a small amount of material away each time, until marks

no longer appear in that position. At that point, you concentrate on the next position that is still showing marks.

If at any time you inadvertently file a position too deeply, you've gone too far and you will not succeed with that key blank. You'll have to start over with a new one. The "rub" is that this can happen without your knowing it. So, part of the drill is to watch each position very carefully and never file unless you're sure the wafer or pin tumbler in that position is still giving you valid marks.

Ready?

Stuff You'll Need

A Cam Lock or Desk Drawer Lock

For “fast track” learning, we will begin with impressing a simple wafer lock. You can find cam locks or desk drawer locks at many major chains like Walmart or a hardware chain such as Home Depot. What you want is (definitely) a lock that has wafer tumblers instead of pin tumblers – we’ll be impressing those soon enough – and preferably one that has 5 depths and 5 key cuts. If you give these points to the manager of a hardware store’s lock and key section, they will be able to help you very quickly.

Or, you can purchase a lock online by going to Amazon and searching for **Prime-Line Products U 11089 Drawer & Cabinet Lock**. This is a 5-bitted cam lock that uses a common Y-11 key blank. A more in-depth guide to acquiring a wafer lock can be found here: [Wafer lock details](#).



Key Blanks (10)

If you purchase the cam lock mentioned above, the Y-11 key blank is the one you’ll need. If you end up with some other cam lock using a different key profile, you’ll need to ask the salesperson to identify the key profile that comes with the lock so you can get hold of some blanks. Better yet, just walk the lock over to the key-making department and you’ll have no problem getting exactly what you need.

You'll have the best chance of success if you go to a "warehouse" type hardware store or perhaps an Ace Hardware. Get ten of them! You're going to burn through a few for sure.

There's another solution, as well. You can order a "Wafer Lock Impressioning Kit" from Lock Pickers Mall (www.LockPickersMall.com). You'll get the cam lock and ten blanks, as well as two working keys. Check the site for current pricing or, if you don't see it in the store, you can order by phone (click on the "Contact Us" link at the top of the page for contact info).

Bench Vise

You're going to need some way to very firmly hold the cam lock. This type of lock normally fits into a cutout in a steel panel or drawer and is held in place by a large threaded nut (as you can see by the image, cam locks typically have threads cut into the shell). You can clamp one of these locks between jaws of a vise if you have no other way. Doing this will probably destroy the threads, but we're using the lock to practice impressioning and it's not likely going to be useful for you in any other way.

Let me say a word about the hobby vises so popular with hobbyists and craftsmen – the sort of vise that relies on either suction cups or a C-Clamp structure for mounting. I've never attempted to impression a key with any of these devices but I would be honestly surprised if any of them were able to do the job. While I've mentioned numerous times that brawn is not a component of impressioning, nevertheless it does require some degree of force to be applied to the key blank/lock combination and you really want something that is capable to holding the lock firmly enough that it will not move with you. Rigidity is the important factor here because if your lock is moving, it is absorbing a good deal of the energy you are applying to the key and this will utterly prevent the tumblers from leaving marks. It's like trying to hammer a nail into a board that is stretched between two supports. Bottom line: I wouldn't spend money on any of these alternative vises.

You don't need a machinist's vise or a pipe fitting vise. On the other hand, a miniaturized vise probably isn't going to have enough mass. Something like a medium sized carpentry vise/utility vise would be ideal. Of course, those much bigger vises will definitely do the trick, if you already have one in your shop, but you'll need to take extra care when clamping such a tiny item as a cam lock in the over-sized jaws. Too much squeeze and the shell will distort or crack and the plug inside will not be able to turn. It will also likely ruin the wafers inside.

If I've spent too much time on this, I apologize, but it is important to have the means to hold the lock being impressioned firmly without doing it in.

If you don't have access to a mounted bench vise, you'll need to drill a $\frac{3}{4}$ " inch hole in a panel of $\frac{1}{2}$ " or thicker plywood and make a mount for it. The lock comes with mounting hardware (namely, a threaded nut and a special washer), so you'll be able to mount it very firmly. The plywood panel should be big and heavy enough to

lend some weight so you can simply prop it up against a wall and do your impressioning that way.

Having said all this, there is a cool alternative that will give you extra value because of its portability. Those little hobby vises are portable, to be sure, but they are usually mounted to a work bench or table in a flimsy way. What I'm eluding to here is an impressioning stand, available online from a very few suppliers – one of which is our store at Lock Pickers Mall. It's called a "FirmHold Impressioning Stand" and it is designed to accept several different kinds of lock cylinders, including cam locks. If you don't see it on the web site, contact the site administrator (go to Contact Us link at top of the page and ask about it).

Impressioning Tool



This has already been discussed in some detail but it is worth emphasizing. You need something that will clamp on to your key blank with fierce resolve. There are several dedicated "impressioning tools" on the market but for my money (something I'm very tight with, by the way) nothing out there beats a *good* pair of locking pliers. The first name that comes to mind is Vise-Grip® but there are other brands that work with the same principle. There are also *bad* ones out there. A while back I had a brain cramp and purchased a set of "made somewhere else" locking jaw pliers that I now wish I had taken back. They never did work well and one of them failed from day one to actually lock. Spend ten extra bucks and get, at least, a brand that you are familiar with.

Impressioning File

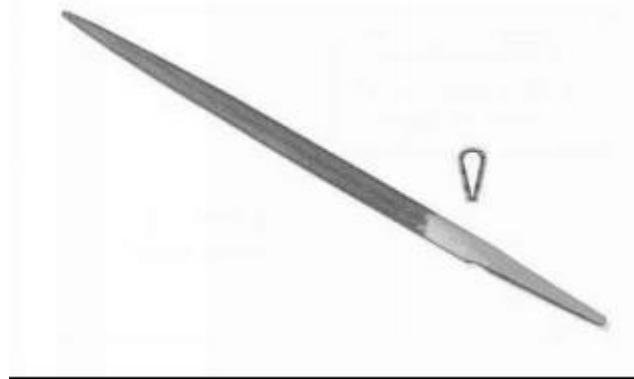
This is going to be the most important tool if you plan to do well from the beginning. Choose the wrong kind of file, or one that is either too aggressive or too fine, and it will work against you. For one thing, it has to be within a certain range

of sizes. You don't want a miniature "jeweler's file" and you certainly don't want that wood rasp you've had laying around for ten years. You need an impressing file.

You can find these online but it's not likely you'll find them in stores. They are pretty specific for the job they are intended to do. The file will represent your biggest single expense, again, if you intend to do well and not work against yourself.

Having said all that, there are a variety of files that can be used, all of them called "impressing files". The difference is in the shape of the file. Expert impressioners have several different types but you can easily get by with only one file if you buy the right kind. What kind is that? It's called a Pippen File and it comes in a #2 or a #4 cut. The #4 is a fine cut whereas #2 is considered "medium cut". That means it cuts a bit rougher, but I've found that it's the best choice for beginners. It removes material faster than the fine cut, but not so much so that it would be considered too aggressive. It's also usually about ten bucks cheaper than the fine cut.

This file is awesome. The profile is shown along with the image below. You can see that it has a teardrop shape, which makes it great for cutting key bittings that have to have a ramp, or slope, on either side of the cut. You'll learn very quickly to shape the cuts correctly and this file makes it easy.



Find it by doing an online search, or just go to [Lock Pickers Mall and find it there](#).

Ok, so let's say you just can't cough up the money for a real impressing file. Are you completely and hopelessly out of luck?

No.

Here is an alternative that I'd still call a candidate for the "impressing" moniker: HPC, one of the better locksmith tool manufacturers, sells a set of files known collectively as KFS-6. These are good files and they even have handles. There is an assortment of six, and while none of them have the Pippen shape, one of them does have a triangular profile that works well enough. The set sells typically for

around \$15-\$20 less than a single Phippen file. Yes, you can find that at our store, as well – or you can do an online search because several other sites also sell it.



I discourage the use of “just any file” because this is such a vital tool when it comes to paving the way to success. If you’re absolutely, positively unable to absorb the cost just yet, go ahead and look for a reasonably good file at a local Walmart or hardware store just to get the “feel” of impressioning. It’s better than using your wife’s nail file.

Magnifier



Marks achieved by impressioning can be extremely subtle, particularly at the very start of a session. This is especially true when trying to impression a pin tumbler lock with tight tolerances, such as Schlage or Corbin. Anything that helps resolve these vague marks is helpful and the obvious tool to use is a magnifying glass. Even if you have acute vision, your eyes will thank you for using one of these. The type that pivots in and out of its own leather or vinyl case is ideal because the lens can be fairly large and yet it takes up very little room in your pocket. You can also choose one of the many varieties that include a light. Marks often look like nothing more than a tiny pin prick (when impressioning pin tumblers) or a very vague scratch across the width of the blade. Magnifiers are found everywhere and I’d be surprised if you have any trouble running one down. You can always go online if your local store doesn’t have something that will work for you.

Light Source

Highly recommended. Choose something small with a focused or narrow beam light. There are dozens to choose from, most of which having LED light sources which are super bright and super economical. You will use this to get a good look inside the keyway as well as to examine for marks on your key blade when working in a dimly light place.

These few items make up the basic requirements to get started on our initial session as well as all further practice sessions! There's nothing more to buy unless you decide to add a couple more impressioning files, if you feel the need.

Practicing With A Wafer Lock

It's time to jump in the pool.

With all the components of your impressioning kit handy, including having some acceptable means of holding your cam lock, you will begin by using your impressioning file to prepare your key blank. Make sure you have more than one blank handy. While it's entirely possible you won't need more than one, it is more likely that you will.

To prepare the blank, all you need do is very lightly file along the edge of the blade of the key. You want to do this evenly, so as to avoid creating divots or marks of any kind. Also, be careful to maintain a surface parallel to the bottom line of the blade. If you create an angle or a slope, however minor, it will impede any chance of success. See next page for an idea of what an unprepared key blade looks like as opposed to after having been prepared.



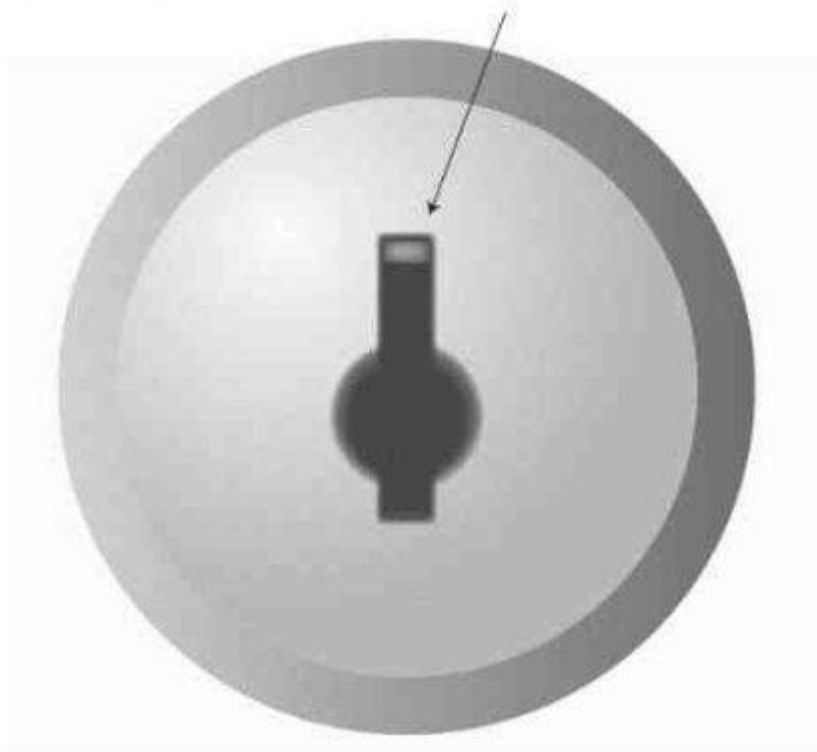
This is called “dressing” the key. All we are trying to do is end up with a smooth, mirror-like surface. A few light passes of the file will do the trick. With the key held firmly in your vise, parallel to the top of the jaws to aid in filing evenly, start at the shoulder of the key (very near the head) and pull the file back toward you. Doing it this way also helps to keep the motion even and parallel. If you are forced to work sideways, just be very careful to keep your file level and to exert equal pressure all along the length of the blade. Each motion should be a complete pass.

Don’t stop along the length of the blade as this will leave subtle marks and it will make it more difficult to maintain a level surface.

Once you have removed just enough material to end up with a smooth and glossy surface, stop filing. If you remove too much brass you will effectively lower the blade to the #1 depth or worse before you even begin.

Okay, your key is beautiful, good job! Remove it from the bench vise and clamp it very tightly in your Vise-Grips, or whatever you’ve decided to use as an impressioning tool, and do it in such a manner that the prepared edge of the blade is facing upward. We do this because we are going to clamp the cam lock in the vise with the wafers at the top part of the keyway. You can determine this by looking straight into the keyway. Turn your cam lock so that the keyway looks something like the image on the next page:

WAFER #1 VISIBLE FROM FRONT OF LOCK



The first wafer will always be visible from the front of the lock. Sometimes it will extend further down into the keyway than depicted in the image on the previous page. The illustration I've used indicates that the first wafer is a short one, corresponding to a shallow cut in the key's 1st position. If the wafer in your lock extends further down, relative to the total length of the keyway, it would indicate your first cut will be deeper than a #1 cut.

This is a great clue. Just by looking into the keyway you can get a good idea of how deep that first cut is going to be. In fact, there is a near fool-proof way of decoding the entire combination just by peering into the keyway, if you use a narrowly focused light and a wire probe. We'll cover that later, because doing this is actually a separate and distinct method of creating key – called “reading the lock” – though it can also function as a valuable hint as to what to expect your impression key to look like.

For now, since you want to concentrate on learning how to impression, let's just use this first peek into the keyway as a nice clue. If the wafer looks like the one we depicted in the illustration on the previous page, you can more or less expect the first cut to be very shallow. But I want to caution you at this point. Don't just automatically file that first position down to what you would guesstimate as a cut #1. Best to go by the marks and not file it until you actually see a mark there.

First Move – Look For Marks

Your key has been prepared and your cam lock, with wafers at the top, has been firmly clamped in the vise.

A word about that now. Most cam locks have a removable cam, or tailpiece, on the back. This is almost always held in with a threaded machine screw that has a lock washer beneath it. This is because most cam locks come with a variety of different cams, each of a different length, so you can modify it to fit the particular application it was meant to perform. Do not work with the cam lock without this tailpiece in place! If you take it off, the plug will simply fall out the front. You will find that the tailpiece can be repositioned by removing it carefully and rotating it to point 90 degrees either left or right (keep the face of lock upward while unscrewing the threaded screw – you don't want the plug falling out because all the wafers will probably spill out as well).

Do this only if, with the wafers at the top of the lock, your cam is preventing you from clamping the lock in the vise. By repositioning the tailpiece to point up or down with the wafers at the top, you should be able to clamp it successfully. The tailpiece will still prevent the plug from rotating very far, but you'll have enough room to verify that the key your making actually works. Check out the group of images on the next page.



Upper image shows the over-sized threaded machine screw that holds the tailpiece to the plug. You can unscrew this – being careful not to allow the plug and wafers to fall out of the lock – and reposition it if need be. Do this if your cam lock, without a key in it, looks like the one on the left-bottom. Reposition the tailpiece so it will be vertical, parallel to the keyway. This will allow you to clamp the lock in a bench vise.

If by chance your cam lock has a permanently affixed cam, you may have to use a couple of wood spacers (or solid plastic or even metal), one on each side of the cam lock, to lock it in the vise jaws in such a manner that the cam will not interfere. The lock plug must be free to rotate for the impressioning to succeed.

Another Alternative

There is an even better solution to the tailpiece problem, and that is removing it completely (if your lock has a removable cam, obviously). You will have to substitute some kind of spacer. This is vital because without something taking up the space previously filled by the thickness of the cam, the lock plug will be free to move back and forth within the shell. This will not do. One method would be to cut as many pieces of stiff cardboard as necessary to equal the tailpiece (cam) thickness, cutting a square hole in the center of each of them. The hole in the tailpiece you just removed will make a good template. You want the cardboard pieces to be roughly the same circumference as the cam lock itself. This way nothing will interfere with clamping the lock in the jaws of a vise, and the plug will be free to rotate. You could also use a number of metal washers for this purpose as long as they are of the appropriate diameter (no larger around than the body of the cam lock) and have a center hole big enough to fit over the square stem on the rear of the plug.

Okay, back to getting our first marks. Your cam lock is securely clamped, the wafers are at the top instead of at the bottom, and you have a prepared key blank in your trusty Vise-Grip pliers, with the prepared edge of the key's blade facing upward.

Slide the key blank all the way into the lock. Now grasp the Vise-Grips firmly and apply a small amount of upward force (at the Vise-Grip handle), which will bring the first part of the key blade into firm contact with the wafer in the number one position. While holding downward pressure, add turning motion to one side and then to the other, back and forth, several times. The plug will not actually rotate but it will allow just enough movement for our purposes. We are attempting to get a mark off the first wafer. Other wafers may also mark.

Relax your hand, returning the key blank to a neutral position (straight, no upward or downward pressure and no sideways pressure).

Now repeat this sequence, several cycles of it, with an upward pressure on the key blank (again, this means applying some upward pressure on the Vise-Grips at the handle which is in reality forcing the tip of the key, within the lock, slightly downward).

The most important caution to give here is to keep the pressure firm but not so much as to actually deform the key blank. Also, take care not to tear the key at the shoulder by using an excess of upward or downward pressure. Brass keys are soft

(this is why we like to use brass key blanks, they show marks easily). It is easy to break off a key at the shoulder while impressioning, and the further along you get in the process, filing the bittings deeper as you go, the more you have to guard against being too forceful.

Pull the key out and use your magnifier to check for marks. If you have none at all, you are probably just a tad too light with the pressure in all directions. It is rare not to have reasonably good marks with this technique even right from the first effort.

If you do see a mark, which will probably look somewhat like a straight line running across the prepared edge of the blank, get your file and very carefully carve a light, very shallow line in that exact location. This marks the position of one of the wafers and it is important that you treat that first filed gouge as the center of the position you are working with.

We will assume that you found just one mark (though it is just as likely you will get two or three of them at different locations along the blade). After deepening that mark very slight with your file, run the file lightly back and forth on the mark while at the same time leaning the file to the right and then to the left – making something of a V shape. But keep this cut shallow! It will at first only be the hint of a V-shape. As you continue to get a mark at this spot, each time you deepen the cut you will also widen this V-shape until eventually, if the cut turns out to be deep enough, it will be an angled cut with slopes on each side of it. The slope angle should be right around 45°.

Examine the blade for any other, less obvious marks. If you see any that look like they should be filed, do so, but don't file if you have doubts that a mark is genuine – put the key back in the lock and repeat the cycle you just performed.

Each time you identify a new mark, follow the same procedure. If a position on the key stops marking, do not file any deeper until such a time it begins to show marks again. It may not. It may be that you have reached the correct depth for that specific cut.

Take a look at the photo on the next page to see what initial marks on a key blank typically look like. It is common for one or two of the marks to be more distinct than others. You should begin filing all of them when they are as obvious as those in the photo, but file only deep enough, in each position, to remove the mark. File each mark separately – you want to create separate cuts, or key bittings, for each position.



This is a first try on a disk lock that has five wafers in it. You can readily make out very good marks in positions 3 thru 5, and a faint but distinct mark at position 1.

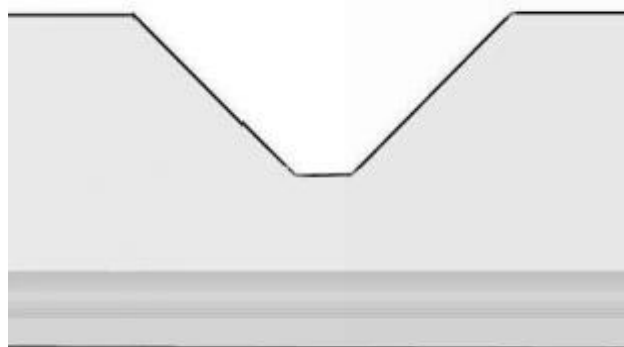
Taking the image on the previous page as an example for a moment, you can not only distinguish several marks, and determine from them exactly where to start filing – but you can also see the spacing between wafers clearly. Knowing this will help you keep your cuts aligned at the correct spacing, which is vital. If the depths you file do not line up correctly with the wafers in the lock, the key has no chance of working.

Happily, you will have a little wiggle room here – spacing must be very, very close to correct but a few thousandths on an inch one direction or the other will not necessarily ruin the key. The point is, you must put full effort into getting the spacing right as well as the depths.

Completing the Key

Repetition is the name of the game here, at least in terms of getting new marks. Each cut, or key biting, will have to be shaped in such a way that there is a slope on either side of the cut. This allows the wafers to “climb” up each slope as the key is inserted or withdrawn. Without these slopes (called “ramps”) the key would become trapped in the plug before it could be inserted beyond the first position because the wafer would drop into the cut (which would in reality be a slot at that point) and become trapped.

It is vital that you give each cut these requisite ramps. Naturally, as any one cut gets deeper and deeper, the angle of the ramp will increase. Shallow cuts will need only minimal ramping whereas deeper cuts will require ever increasing angles – up to a maximum of about 45° . The following illustration depicts a deep cut (#4 in this case as we are currently working with small wafer locks and keys).



Of course the precision of the angle certainly does not have to be as exact as the drawing might suggest, but the ramp should be as symmetrical as possible.

As you continue, you will begin to note that some positions mark sooner and deeper than others. These positions will be the deeper cuts because the longer the wafer (remember, longer wafer corresponds to deeper cut) the sooner it will bind as you turn your key and work it up, down and around. Mark number 4 on our earlier photo, which is the second mark from the end of the key blade, is a good example

of this. It is a significantly deeper gouge than mark number 2, though marks 3 and 5 are nearly as deep. In a case like this, you would work on deepening those last three positions until positions 1 and 2 begin to mark better – then carefully watch each and every mark so as to avoid going too deep on any one of them.

As you get closer and closer to the right combination, your key will eventually start feeling “sticky” as you apply turning motion. Be extra careful here, because you will be tempted to force the key beyond this stickiness. It starts to feel this way when you are almost there! Remove the key and you should see at least one of the positions has become deeply gouged. This mark will likely be the last one you will have to work on, and it should at this point be a matter of a few thousandths of an inch deeper with the file.

Once the key actually turns, make sure it doesn’t twist or break. Turn it very carefully staying aware of more stickiness. If the key again becomes sticky, turn it back to neutral carefully and withdraw it, looking for further signs of heavy marking on some other position. There is danger here. If you force the key to rotate before all the cuts are at sufficient depth, it could turn a few degrees and then jam tight. You might be unable to return it to the neutral position and if you force it back to that position you could very well break the key off or deform some or all of the wafers inside the lock. Bad idea.

Once the key is complete, it should easily turn the plug.

Remove the key, silently celebrate (unless you are alone in which case you can let it all hang out), and “clean it up” by filing away any barbs and smoothing everything out the best you can. Dress the ramps on each cut, meaning use your file to make them as pretty as possible – unless you are simply going to use the key to produce a second one either by hand-filing or, preferably, by duplicating it on a machine. If you happen to be lucky enough to have a code cutting machine, you can use your hand-filed original as a template and decode each position. Once you are reasonably sure you know the combination, cut a new key on the code machine and try it in the lock.

On occasion, you might not be able to take the lock with you to the code machine – for example, you have impressed a key for a customer and the lock itself is installed in a place that makes it difficult to remove it. In that case, decode the filed key visually, write down the combo, and take it to your shop or service vehicle or home or wherever. Make several code-cut versions, varying the cuts very slightly in depth and take these keys back to the location of the lock. One of them should be perfect if you’ve done your job right.

The take-away is that impressing a key for a common wafer lock is really pretty easy if you take your time and avoid breaking it off in the lock. Doing that will add time and grief to the job, so don’t do it!

Keys will from time to time start bending, especially as you get deeper with some of the cuts. This is why it is best to have several blanks on hand. You will want to stop using a key that is beginning to bend or tear because once this starts, it is definitely going to snap. If you find this happens a lot, it means you are using too much force. Use just enough to get marks.

Wafer Position

So far we've talked about setting up a cam lock in a vise in order to practice impressioning. I advised that you clamp it so that the wafers are at the top of the keyway. This is my preference, it may not be yours. Either way, you have control over how you wish to orient the lock.

If you are going to practice on a lock that is installed on something like maybe a drawer or an electrical panel, you will be stuck with however it has been positioned.

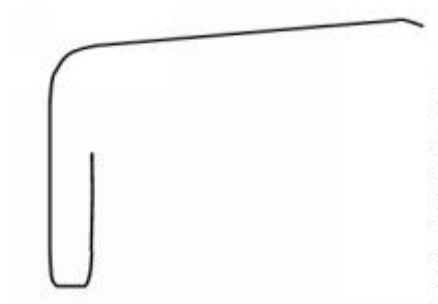
This is probably an obvious point, but I want to make it, anyway. Take a close look into the keyway with a focused light if possible. Your key will enter the lock only one way – the correct way – but it is good to know where those wafers are ahead of time.

Cheat a Little – It's Fun!

One reason for having a small, focused light with you is for getting a leg up on the lock by peering into the keyway with it. There are a great many of these lights on the market now. They are smaller than ever so it is easy and practical to take one along, or have one on hand if you are practicing at home. LED inspection lights can be found online, or even in many hardware stores.

Why look into the keyway? Well, it's one way to cheat just a little. It also makes the impressioning job easier and faster. You should have some kind of wire probe with you, too. Tools for reading locks are available online, but you can make do with a bent (large size) paper clip and your LED inspection light.

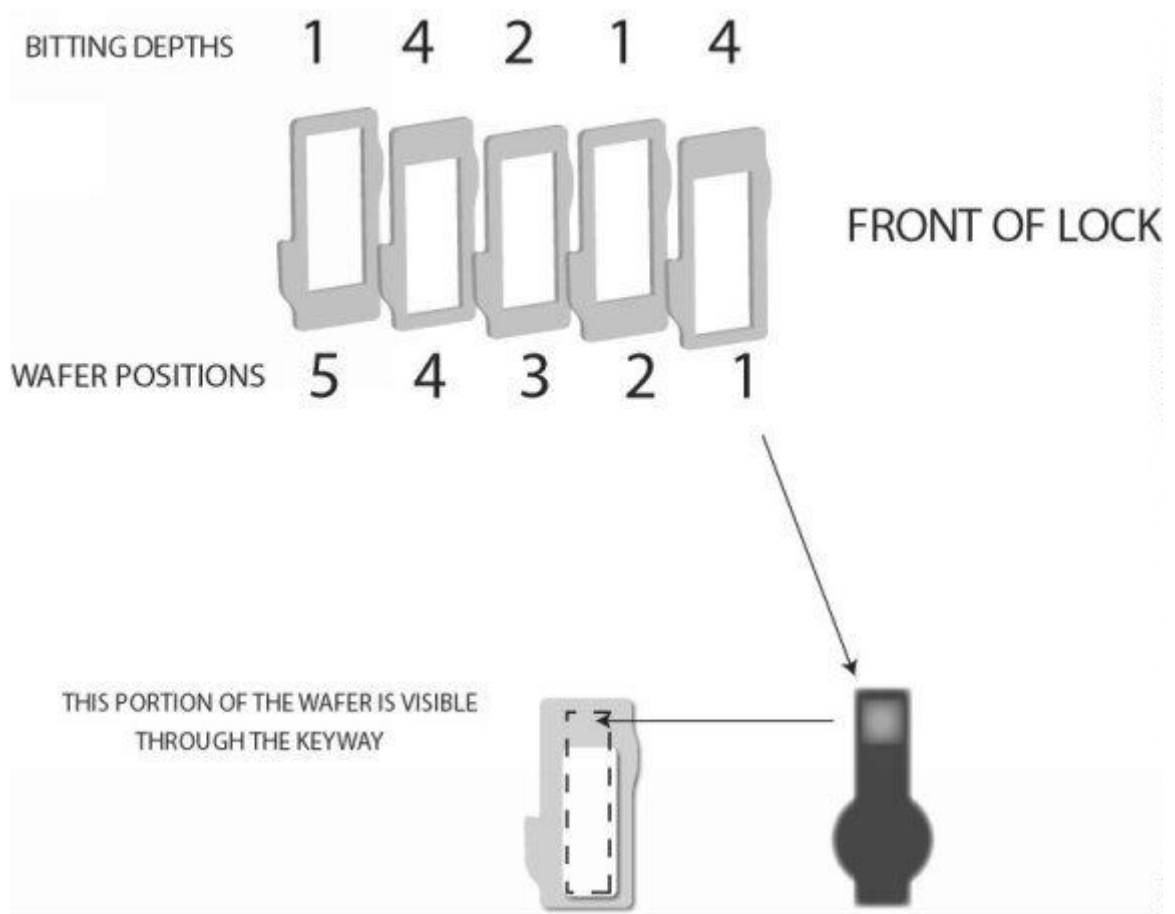
Bend your paper clip like this:



If you are using a large enough paper clip it should be stiff enough for our purposes.

The long leg will be your wafer depressor. The small curled end will serve as a handle of sorts. You can always cut a piece of wood or even cardboard to tape to this part of the paper clip for a better grip.

You will use this tool to depress the wafers within the keyway, one at a time, to determine their relative depths. What makes this possible is the fact that each wafer in the lock sits at a “neutral” position when there is no key inserted. A very tiny spring resides in the same groove that the wafer slides up and down in, and this spring pushes the wafer into this neutral position (it also serves to press the wafer against the blade of the key when a key is inserted). Thus, each wafer is actually partially visible from the front of the lock, through the keyway. What you are seeing is the upper limit of the rectangular window in the center of the wafer. The illustration on the next page will help you visualize this. Also, you will be able to see how this fact makes it possible to read all the wafers within the plug of the lock, using your bent paper clip as a wafer depressor. The lock in the illustration is a 5-wafer lock, so your goal is to come up with a 5-digit key combination by scoping each wafer in turn, back to front. Recognizing the relative difference between wafers is the key (no pun intended).



The technique varies from user to user but what works best for me is to insert the long leg of the depressor (in this example, the paper clip) all the way to the rear of the keyway, avoiding contact with the wafers. This is easy, just aim for the middle of the keyway, because the wafers only extend down into the keyway about half way (usually – varies from lock to lock). If your lock is mounted the opposite way, with wafers on the bottom, then they will be extending upward into the keyway the same distance.

Once your depressor is fully inserted, and while watching closely with a focused beam of light, depress all the wafers at once by moving the depressor in a level fashion upward (or downward if the wafers are at the bottom). The wafer springs contract, allowing the wafers to move.

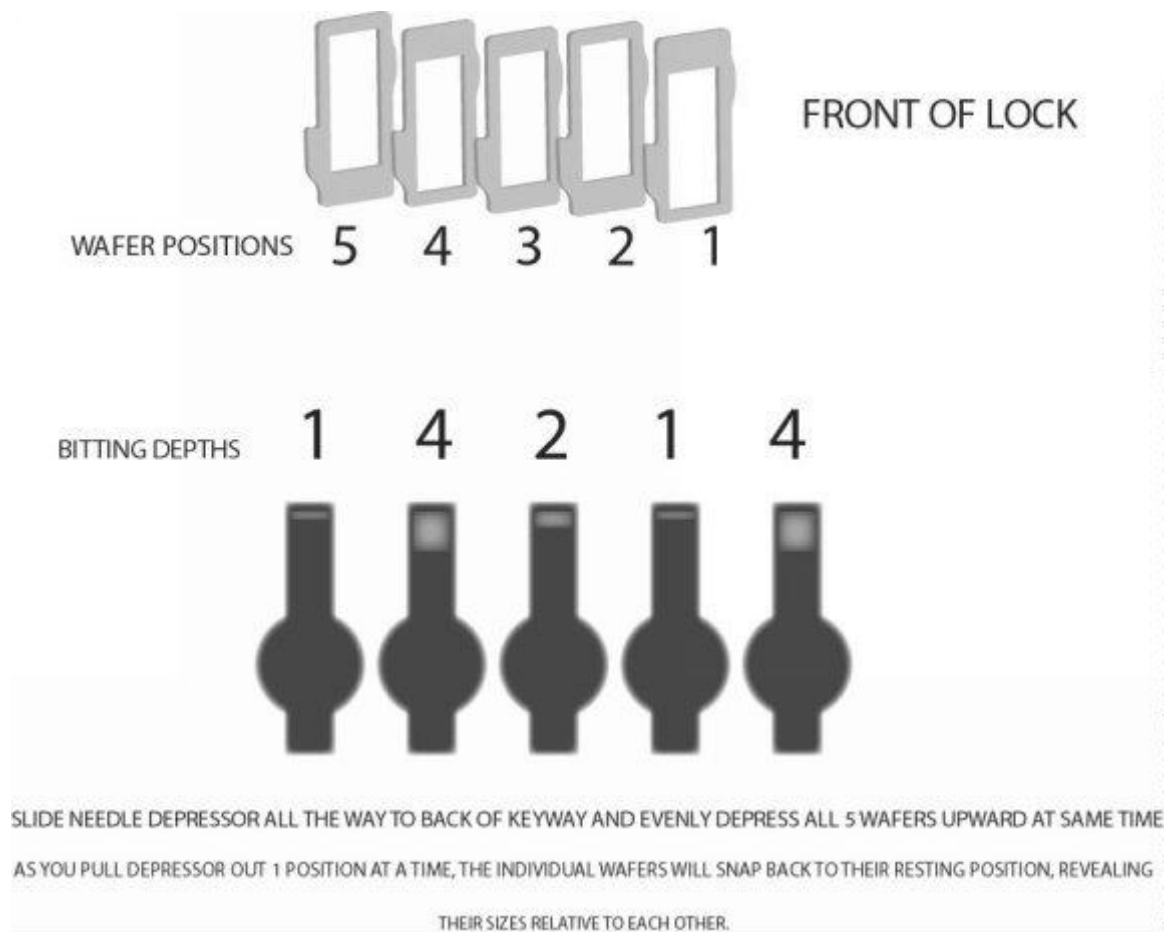
Now comes the magic. Keep your eye focused on the back of the keyway as you slowly pull the depressor out just enough to let that rear wafer snap back into its neutral position. Do this while making sure you keep the depressor flat – don't tip it at all one way or the other. Note that you can see a part of that back wafer quite clearly. Because wafers are always brass, if you are using a reasonably bright inspection light it will shine like gold. Take note how far down (or up) into the keyway it extends. Is it barely visible? Is it sticking quite far into the keyway? If it is barely visible and you can see only a sliver of it, it is almost certainly a #1 cut. The less brass you see, the more shallow your key cut at that position will be.

Now withdraw the depressor just enough that the next wafer drops. Compare the amount showing with wafer #5. If wafer #5 happened to be a long one (meaning a lot of brass was visible, so it's a deeper cut), and #4 happens to be a shorter one, you'll be able to compare the two of them visually because both will be visible – the wafer in position 5 will be hanging a bit lower than the wafer in position 4. That's always cool, because it makes it even easier to make the comparison. But many times, wafers up front will drop further down than the wafers behind it, so you should keep in mind the comparative lengths as you continue to withdraw the depressor.

It will probably require doing this a few times to verify that you have the numbers as correct as possible. How does this help you impression a key? It gives you a great idea as to what the finished key will probably look like. If after reading your lock you are pretty certain, for instance, that wafer #1 (first wafer in the keyway) is a very short one, you will naturally assume that position on the key blank will end up a very shallow cut and you'll resist any temptation to file it deeper than what you'd assume a #1 depth might be.

There are plenty of working locksmiths, and I count myself among them, who, when originating a key for a wafer lock, will do it strictly by reading the wafers and then cutting the decoded combination on a code machine, rather than impressing a key.

But this publication is about impressioning, so all this is offered here as a way to “cheat” before you even start filing.



Note that the combination for this lock, expressed from the front to the back (which is the correct way to read it), is: 4-1-2-4-1.

If you find that using the paper clip as a depressor works for you, you might later on want to consider investing in a tool designed for the purpose. Some of them can be pricey but there is really no need to spend a lot of cash for a good tool. [Look into the D-219 Key Scope](#). It's a great tool that combines a brilliant LED light source, a wafer-reading depressor and a built-in magnifier, all in a light weight but durable package that is easy to carry around and easy to use. You might just end up originating most of your wafer lock keys via the lock reading method!

Finish the Key

Depending on whether you are just practicing to get acquainted with impressioning or actually making a key for someone, you will want to take a few further steps to finish the key now that you have created one that successfully turns the lock.

If the key is for your own use, you can stop here providing it works smoothly and does not cause undue binding on the wafers as the plug turns. If you intend to start fresh and repeat the process – not a bad idea, by the way – just set it aside and pick up a new blank. This time, impression the key without reading the wafers and try as best you can to “forget” what the working combination turned out to be.

If the key is to be given to someone as a working key, you will want to make sure it has no signs of tearing or bending and that all the bittings are properly ramped and without barbs. It might be a good idea to pass your file a few times lightly over whatever tooth marks the head (bow) may have picked up as a result of clamping it in the Vise-Grip jaws.

Rekey It

Cam locks are generally pretty inexpensive but regardless of that you do not have to buy a new one in order to start completely fresh with a brand new combination. In most cases you can take it apart in seconds, remove the wafers carefully, scramble them, and end up with a rekeyed lock. Yes, the depths will still be the same, but by scrambling the wafers the actual combination will be different. If it was originally, like our example in the previous exercise, 4-1-2-4-1, you can rearrange it to be a number of different combos. How about 4-4-1-1-2? How about 1-4-1-2-4? The point is, each time you reset the combination, your impressioning experience will be different. The marks will appear in a different way. You can do this dozens of times without damage to the lock or to the wafers if you are careful.

Here's how to do it. Unscrew the over-sized threaded machine screw on the rear of the lock and remove it (along with the cam if you didn't do this before). Now you can simply slide the plug out of the lock, pulling it out from the front. Be careful not to drop any of the wafers as you do this. Keep an eye on the plug as you begin to pull it out of the shell. If the wafers seem to want to “fall out the bottom”, rotate the whole lock before going any further so the wafers are aided by gravity to stay in their respective slots. In most cam locks, the wafers “snap in” with just enough

resistance to prevent them from falling out, but this is not true of all of them. In some, they have nothing keeping them in the slots except the surrounding shell – in which case they would easily fall out if you have the plug oriented the wrong way. If the wafers fall out, so will the tiny (and I mean “tiny”!) springs. Each wafer will have a spring hiding in the same slot and if you lose it, you will have a time trying to find it. The wafers must have spring tension or the lock will be worthless.

If your wafers are the type that snap in, you will need a pair of skinny needle-nose pliers, or a strong tweezer, to pull each wafer straight up and out of its slot. Sometimes this requires using the tip of a pocket knife or similar tool to push the wafer out of the slot from the bottom of the plug. Pay particular attention to making sure the spring for each wafer remains in the slot. You do NOT want to take these out! In any case, as you remove the wafers one by one, keep them all facing the same direction and avoid flipping any of them over. It is important to return them to the plug facing the same direction as they left it, but in a different order. It does not matter how you re-order the wafers, at least in the case of simple cam locks with only 4 or 5 depths. Working with locks that have as many as 6-8 depths is a different matter but that is beyond the scope of our discussion. Just scramble the wafers so you will be impressing a key with a totally different combination, as described above.

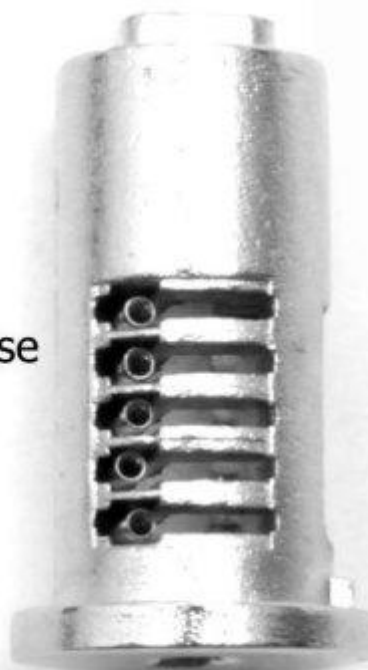
Snap the wafers back into the slots after you have re-ordered them. Make certain the spring in each slot is still there – it is mandatory in order to drive the wafers. Without the springs in place, the lock will not function properly. Test the wafers by pushing them down with your finger. They should depress into the plug easily and spring back up to their neutral position smoothly when you release pressure. If they are wafers that do not snap in place, release the pressure of your finger slowly to keep them from jumping out of the plug.

Return the plug to the shell. You will need to depress the wafers from within the keyway using a wafer depressor or the extended leg of the paper clip you used as one. This forms a shear line and allows the plug to slide back into the shell. Return the tailpiece or the spacer you created and the threaded screw. You now have a brand new key combination. You have rekeyed your cam lock!

The photo on the next page displays the cam lock “exploded”.



Do not lose these
springs!



MOVING ON TO PIN TUMBLER LOCKS

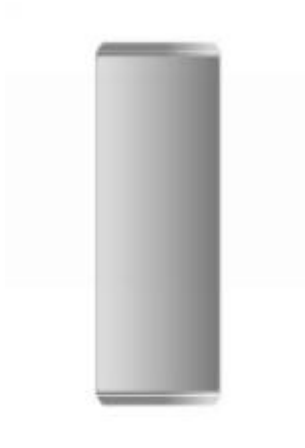
Congratulations, you have successfully impressed at least one key for a wafer lock. It would be a great idea to spend a little time repeating your success before moving on to pin tumbler lock impressioning simply because doing so will help to form habits that carry over to the bigger, harder locks. Just about everything you learned in the prior exercise(s) will translate to pin tumbler locks.

If you are ready, let's move on.

Don't Start With Kwikset!

This may startle some practitioners but I stick with this view from years of working with beginners. The Kwikset keyway is a great one to start with if you are practicing lock picking because of its uncomplicated shape, and because tolerances with Kwikset locks – and this includes store brands that use the same keyway – are somewhat forgiving. But one characteristic makes working with them for impressioning purposes undesirable, and that is the shape of the pin tumblers.

This is what a Kwikset pin tumbler looks like (next page):



Notice anything? If we are going to rely on the tumblers to leave distinct, unambiguous marks, a Kwikset tumbler might not be the best choice because it literally has no point at the bottom of the pin. These tumblers are flat on the end, or nearly so. That does not mean they will not leave marks, but you can imagine, I believe, that marks left by a Kwikset pin tumbler might be less obvious than marks left by, say, a Schlage tumbler, which is shaped like this (next page):



The pointed end will do a better job leaving marks. The marks, as you might guess, will resemble little pin points in the brass, which will at first be quite small but as the file cut more closely approaches the correct depth for any one pin tumbler the mark will become more like a small crater. The point is simply that, to start out, it is going to be easier to see the marks left by pin tumblers that have more of a point on the end.

The Schlage key is also just a little thicker, overall, than the Kwikset key and will thus resist breakage a little better.

So, to get going on this next exercise you will need access to a lock that has a Schlage keyway. In most cases this will be a Schlage brand lock but there are store brands out there using this keyway. It's easy to tell if a lock has the keyway we are referring to because in all cases the keys included with the lock will sport the trademark Schlage bow shape. Here is a typical Schlage (rhymes with "Craig") key bow shape:



If you purchase a deadbolt using a key that has this basic head shape, you will be getting one with a Schlage keyway.

We Can Do This the Easy Way Or the Hard Way . . .

Unlike learning to impression keys with wafer locks, pin tumbler locks are inherently somewhat more challenging for several reasons, one of which is that pin tumblers are not as anxious to leave nice, clear marks right from the outset. Pin tumblers like those used in Schlage (and most other) pin tumbler locks do have a “pointy” end, and this is better than Kwikset with the flat ended tumblers, but the marks they leave can still be a challenge to make out, particularly when you first begin work on your key blank.

One way – the easiest way in one sense at least – is to get hold of a pin tumbler lock that has had all but one or two pins removed. This makes it easier to get marks (the more tumblers binding the plug from turning, the less likely you will get clear marks from any of them until some of the filed cuts approach the correct depth). Pin tumbler locks can be rekeyed just like most wafer locks, though the process is a little more complicated. You have two ways to accomplish this without having to learn rekeying procedures yourself:

- 1- You can buy your practice deadbolt at a locksmith shop and ask the locksmith to remove 3 of the 5 tumblers for you.
- 2- You can order a “practice lock cylinder” online with 2 pin tumblers (or maybe 3, if you’re feeling up to a measure more of a challenge).

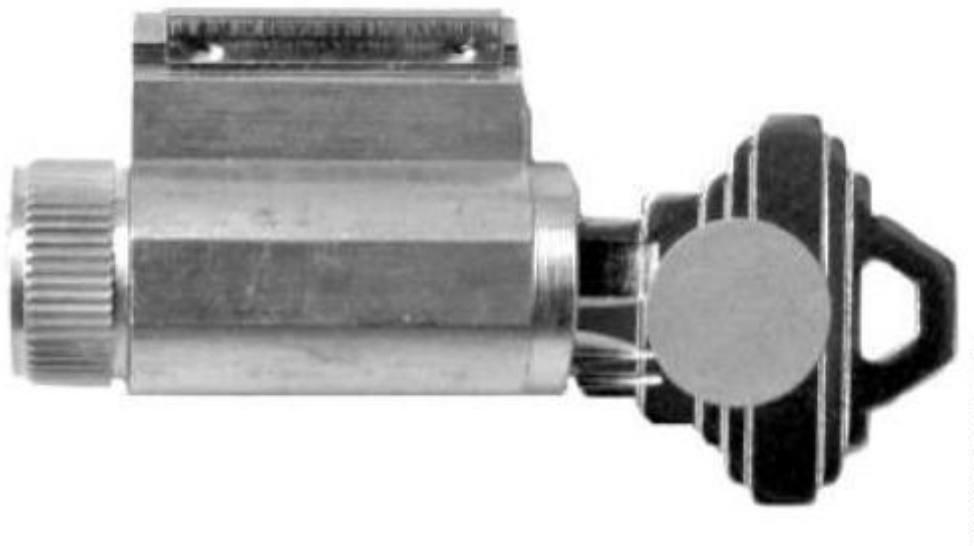
Option 1 is a good way to go if you have a local locksmith who is open to the idea of helping you learn lock picking and/or key impressioning. Some are, some are not. There is also an outside chance that he/she might be willing to give you a free Schlage lock cylinder from old stock – every locksmith in the world has bins of old lock cylinders that will never again be used, that’s just a fact. This makes option 1 pretty attractive.

Option 2 can be accomplished from the comfort of home or on the fly using your smart phone or tablet or whatever. Practice locks fifteen or so years ago were incredibly rare. Not any more. Online you will find literally hundreds of them from different sources. So finding a 2- or 3-pinned practice cylinder with a SC keyway is no problem at all, but you should avoid certain types. Do not buy one made of plastic! These are fine for visual aids and they have some viability as lock picking practice locks, but trying to impression a key off one of these and you’ll get nowhere, except maybe to succeed in cracking the plastic housing. You might get usable marks, but this is not a “given” and what you want as a beginner is as much assurance as possible that your efforts are going to be predictably successful.

[Here is a link to a 2-pinned practice cylinder, KIK style, with a SC keyway, available at LockpickersMall.com.](#) The link goes to the general category of “standard” practice locks, which means they are not cutaway style, and you simply choose your options before adding to cart. Choose a SC keyway and choose 2-pinned (or 3 if you like).

I know, you're wondering what "KIK style" means. "KIK" stands for "key in knob" and it alludes to the fact that this form of lock cylinder is commonly used for keyed knobs and levers. It is a somewhat misleading term in that the same type of cylinder is prevalent in deadbolt locks, as well. They are useful for practice because they are small in size (though the size of the pins, plug and keyway is identical to larger mortise lock cylinders) and generally easier to handle. You can clamp them in a bench vise, just like you did with the cam lock, or you can select one of many dedicated practice lock stands to serve as a holder. One note of caution: Because we are going to be using the cylinder for impressioning, you would want to choose a stand that lends itself to this technique rather than one that is designed only for lock picking practice.

Here is an image of a typical KIK style lock cylinder:



Now, if you happen to have locks installed in your home that are either Schlage or some brand using the SC1 keyway (this is the most common Schlage keyway), you should take advantage of this and simply use your own locks to practice key impressioning.

Alternatively, maybe you have a close friend or relative that has such locks in their home or office. If you go this route, and you choose the "easy way" (practicing with a lock that has only 2 pin tumblers in it), you will have to remove it from the door and hoof it down to a locksmith shop (or maybe a hardware store with a dedicated lock service area) and ask them to rekey it using only two tumblers. They will ask "why", you can bet, but be honest about it and tell them you are a student of lock technology trying to learn the fine art of impressioning and I would bet they will help you out. Might cost you \$5, might not.

One huge advantage of doing it this way is that the lock will be mounted to a door and this will serve to lend a massive amount of stability – whereas a lock clamped between the jaws of a vise, no matter how tightly held – will tend to move as you

work to obtain marks. In fact, if the lock is too tightly clamped, it will prevent success and will likely damage the lock cylinder.

Pin Tumbler Impressioning Kit

There is yet another alternative that makes using our Fast Track System that much easier – you could purchase a Pin Tumbler Impressioning Kit at LockpickersMall.com. This kit consists of the following items:

- (1) KIK style practice lock with SC keyway, delivered 2-pinned but drilled for 6 pins
- (25) SC1 key blanks
- (10) extra top pins
- (10) extra bottom pins
- (10) extra springs
- Impressioning File
- Pocket Magnifier
- FirmHold Impressioning Stand

This kit is especially useful because the three practice locks can be rekeyed by the user without special tools and with no prior rekey knowledge required. The cylinders feature a snap-on top retainer cap that allows easy access to the pins and springs. This means you can set up a variety of pin combinations in any one lock to give you many hours of impressioning practice without always having to impression the same pin combinations. You will learn at a faster rate. An added bonus is that these practice locks are drilled for 6 pin stacks, and that means you can even practice impressioning a 6-pinned lock. A bag of extra top and bottom pins, along with springs, is included in the kit!

If you don't see this item in the online store, contact LockpickersMall.com by way of the "Contact Us" link at the top of the webpage and ask about it.

The Hard Way

Going the hard way is contrary to our Fast Track Impressioning Method but I mention it here to acknowledge that it *is still possible* to learn impressioning this way. The hard way is simply to start with a fully pinned lock cylinder, which is generally 5 pins. The "hard way" is the "easy way" in one respect and that is because you will not have to deal with having your lock rekeyed and reduced from 5 pins to 2 pins. Particularly if you already have Schlage locks on your home or business, you can just step up to one of them and get on with it. Just be aware that it may take twice as long and twice as much patience to make progress.

Let's Do it the Easy Way!

Because we are calling this the "fast track method", we should use the option that has the best chance of early success, right?

Here is your homework: Obtain a 2-pinned lock cylinder with a Schlage keyway, or, if you have it available, remove a Schlage lock (deadbolt preferred, easier to impression than a wiggly old door knob) from one of your household doors and have it rekeyed, leaving 2 pins inside. The actual positions you leave pinned is not a critical matter, but since you have the choice I would suggest telling the lock technician to leave in position #1 and position #3. Tell him not to tell you which pin tumblers he uses, in terms of their depth-value. It is not a deal breaker if he does tell you, but not knowing makes it a just a tad more fun when you have to impression a key and you don't know beforehand what the combo is. This is a departure, I admit, from the advice given on the wafer lock impressioning, but keep in mind that we're only impressioning two pin tumblers here so it will be a different animal altogether.

If you buy one from LockpickersMall.com or some other online store, be prepared to have a decent bench vise ready with which to clamp it. Or, you can buy one of these:



SureGrip Impressioning Stand

This is a stand available at Lock Pickers Mall by special order (as of the date of this writing – plans are to add this to the general lineup soon). Check for pricing and availability by contacting LockpickersMall.com --- go to the website and find the “Contact Us” link at the top of the window.

This stand will endure the stresses associated with impressioning pin tumbler lock cylinders. The image above illustrates how a KIK style lock cylinder is fit into it. The upper port can be used to secure a mortise cylinder, so if you prefer that sort of lock cylinder the stand gives you a way to clamp it. You can purchase mortise cylinders from locksmith shops and you can opt to have them rekeyed into a 2-pin cylinders just the same as is possible with the KIK (or any other) type of pin tumbler lock.

The stand base is solid aluminum and the “head” portion, which accepts the locks, is made of durable PVC plastic. The stand must be mounted to a sturdy surface using mounting screws, which are provided.

Here is the same stand with a mortise cylinder installed:



I’m sure there are other stands out there that have been designed for impressioning, but this one is compact, easy to use, and reliable. I know because I designed it.

Key Blanks for Pin Tumbler Lock Impressioning

So now you need to come by a dozen or so key blanks for your Schlage lock. As with the wafer lock, you can get these either from a locksmith shop or a hardware store, and you can also readily obtain them online. What you need is brass (not nickel-plated brass, not aluminum, not steel!) SC1 key blanks. You do not have to buy name brand Schlages because this is an extremely common key blank and it is offered by dozens of secondary brand manufacturers. If I were you I’d buy even more than a dozen – maybe a packet of 25. Since we’re doing this the easy way, we will be advancing from 2-pin to 3-pin to 4-pin to 5-pin eventually, and all this eats up key blanks.

Same caution as with wafer impressioning: Be very careful not to break off a key in the lock in your unbridled enthusiasm. Even though these are larger keys, they are nonetheless prone to bending and tearing if too much force is applied via the Vise-Grip pliers.

You already have the tools you will need to get a start with impressioning pin tumblers locks: Vise-Grips, file, magnifier and LED light source.

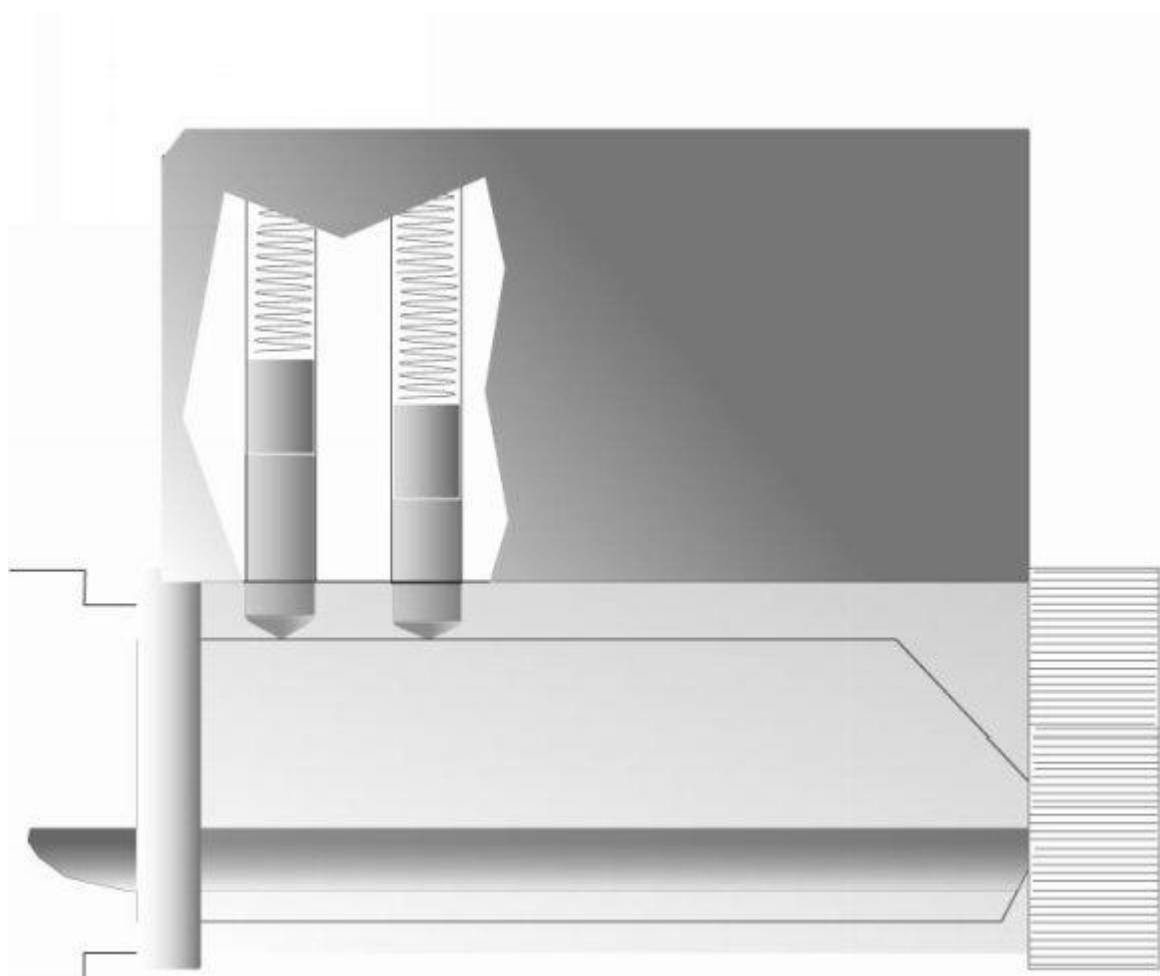
Pin Tumbler Locks Revealed

Before we start, I believe it is helpful, just as it was with wafer locks, to give some explanation of how pin tumbler locks work so you can better understand how the impression marks are made.

Whereas wafer locks, like the cam lock we used in the first exercise, are one-piece affairs that slide up and down within a groove or slot, driven by a very small spring, pin tumblers are really “stacks” of tumblers, each stack riding up and down in the lock plug within its own cylindrical shaft and driven by a much more robust spring. The pin stack is usually made up of two different types of pin tumblers; a top pin and a bottom pin, along with the single spring. This makes up a single stack unless the lock happens to be master pinned in which case an extra pin (called a master wafer) is added. We will steer clear of going into master keying as it does not relate to our current subject.

The top pin in a pin stack is flat on both ends and serves as a “driver”, pushing down via the spring on the bottom pin. The bottom pin is the pin tumbler that actually touches the key blade and it has a bullet-shaped or pointed end (unless it is a Kwikset pin and we’ve already explained how that differs).

Here is a depiction of the first two pin stacks within the plug of a pin tumbler lock (next page):



When you insert an uncut key (a key blank) into such a lock, both bottom pins will be thrust up so that they are partially within the upper chamber (we call this the “pin bible”). Thus, no shear line and the plug cannot rotate. If you attempt to rotate the plug using the key blank, the pins cause the plug to bind and this binding, in turn, causes the pins to rub hard against the blade of the key blank – leaving marks. We also add vertical motion, more or less “jacking” the key up and down with a very short, very subtle motion to avoid damage to key and/or lock. This tends to make the marks even deeper.

2-Pin Impressioning

I will assume you have your 2-pinned practice cylinder set up in whichever way will work for you, and that you have a few SC1 key blanks handy. If so, great! Let's get started.

The first step, as with wafer impressioning, is to prepare your blank. Remember, it is not required NOR is it recommended to lubricate the lock. Best if it is clean, but inserting lubricant will actually work against getting clear marks so avoid it at all costs.

There are two different methods of blade preparation when it comes to pin tumbler locks. The first one I will mention is identical to what you did when you tackled the wafer lock, and that is to use the file to dress the key blade down just a thousandth of an inch or so, leaving a mirror-like, smooth flat surface. The other way is to file the blade to a knife edge. For what it's worth, my personal preference is the flat blade option.

Smoke ‘Em if You’ve Got ‘Em

Some practitioners like to blacken the key blade prior to inserting it into the keyway. The idea is to use one method or another to add a micro-thin layer of black or near-black smoke or ink, which makes subtle pin tumbler marks easier to recognize. The old way, which I imagine some still use, is to hold the key blank over a lighted match, high enough to catch the smoke and escape most of the flame.

Let the smoke coat the prepared blade and then try to get marks.

I've found that most locksmiths use a felt tip marker for this purpose. I've never really used either method much in my long career, preferring to stick with a naked key blank. Try all of these methods and you'll quickly settle on what is right for you.

In preparing your key blank, be careful that you do not remove too much brass as you dress the key. You want a flat, level surface but what you don't want to do is get down to the level of the #1 cut. It is not necessary to know what the exact measurement is – just watch that you file only enough to remove the uneven, pock-marked surface of the blade.

Clamp your key blank with maximum hold, any movement of the key during impressing will just serve to minimize the marks you get. Insert the key, which will enter the keyway only one way (the “right” way). Your practice lock should be oriented in such a way that the tumblers at the top of the keyway. This is the way almost all pin tumbler locks are installed and it is also the easier way to do impressing.

Begin, as with wafer locks, by gently but firmly rocking the key in the keyway while giving it the slightest amount of turning pressure. The turning pressure assures the plug and the pin tumblers are tightly trapped and that the key blade will stay in firm contact with the tumblers. Give the Vise-Grips just a hair of “jacking” motion, as if you are jacking the handle of a car jack up and down. This must be subtle to avoid starting a rip in the key blade itself.

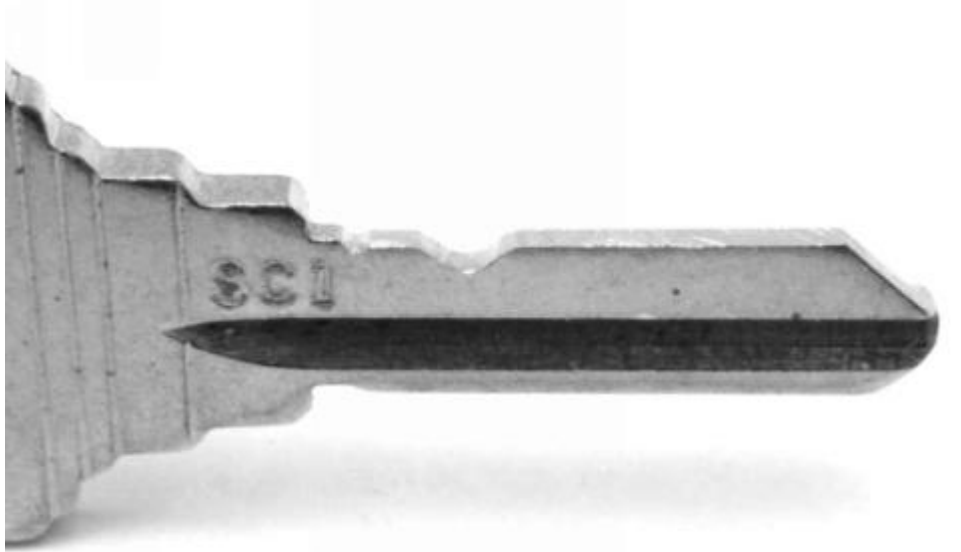
Alternate this “jacking” motion with sharp right and left movements, as if trying to turn the key in the lock. Do this without exerting so much force the key blank begins to bend.

Now remove the key and examine the blade with your magnifier. Use the LED light if you feel you need more light, moving it from time to time to cast a different shadow across the blade. Your first mark may be well formed but it is just as likely to be barely visible. This will differ from case to case. A lot depends on the make of the lock, the number of pin tumblers in the combination, the condition of the lock, the condition of the key blank (how well did you prepare it?), and on and on. You rarely experience the same thing twice with impressing!

Because we are working with only two pin tumblers, there is a good chance that both tumblers have left marks. Is one of them deeper than the other? If so, is the lesser of the two very faint? It is good practice to work on the deeper mark first in this case. If both of the marks are distinct it is okay to file both of them.

When you deepen a cut in response to a good mark, file down just enough to remove the mark, and remember to widen the ramps on either side of your cut as you continue to deepen the cut. Ultimately you will want to flatten the bottom of the cut using the side of the file, and do your best to smooth it out at the bottom, too. This greatly enhances your chances of distinguishing further marking. If you leave the bottom (or “root”) of the cut full of scratches and gouges, any further marking by the pin tumbler might go unnoticed.

The image on the next page illustrates a well formed file cut, which in this case corresponds to the #2 position on the key blank and the cut (bitting) is at Schlage #2 depth.



Return the key to the lock and try again. If you are using either the smoking or the inking process, you should include this step first unless the marks you are getting are so obvious that you feel it is unnecessary. With only two tumblers in the lock, I would be surprised if these procedures (smoking or inking the blade) prove helpful. The impressioning should go quite quickly.

Repeat this process until your marks become downright gaudy. Just before the plug rotates easily, it will “try” to turn when you go through your back and forth impressioning motions but it will feel “sticky”. This is because you are almost there, and the shear line is nearly perfect. Don’t make the mistake of forcing the plug to make a more complete rotation. Instead, return the key to the neutral position, withdraw it, and finish whichever cut or cuts have marked further. Your key is not finished until the plug rotates with no resistance.

If one of the positions stops marking but the other one is still doing so, leave the position alone that is no longer getting marks and work only on the one not yet “there”. If both marks stop marking and the key is not even trying to turn, you have already filed too deeply on one or both positions and you will have no choice but to start over with a new key blank. This is why marks should be filed carefully and only just enough to remove fresh marks.

Jumping to Five Pins – Watch Out!

My strong suggestion is that you continue with impressioning various versions of the 2-pinned cylinder until you can consistently create a working key with comparative ease. By “version” I mean that you should scramble the pins you are using – hopefully you have purchased one of the specialty practice locks at the Lock Pickers Mall web site which have the removable retainer cap. If so, you can move the pin stacks to new positions (don’t forget, both top and bottom pin plus the driver spring have to be moved together). Practice with pins in different locations. If your first cylinder had a long pin in the first position and a shorter pin in the second, switch them. Then try moving the longer pin back to position number 5 in the lock and keeping the shorter pin at #1 or maybe move it to a different position as well.

That’s the fun of having a practice lock that can be readily rekeyed without the use of special tools. All you need is a regular flat-blade screwdriver to pop the retainer cap off. It snaps back on using only your fingers, so the whole operation takes seconds. If you have extra pins (such as, if you purchased the Pin Tumbler Impressioning Kit), so much the better. You can practice with extra long and extra short pins, moderate length pins along with longer pins, shorter pins along with moderate length pins, etc. etc. etc.

Then add a pin stack and spend a week or so impressioning keys with a 3-pinned set up. Then add a fourth pin and repeat. This progressively growing challenge will easily put you on the Fast Track to Impressioning, guaranteed!

Eventually you get brave enough to load your practice lock with five pin tumblers. If you are doing the loading, as opposed to taking it to a locksmith or a hardware store, make sure you are using a variety of pin lengths in your combination. I like to “blindly” load the bottom pins, trying my best not to memorize which positions are going to have the long pins and which positions have the shorter pins. I spread out five bottom pins (you load these first when loading the cylinder from the top – be sure to load them with the pointy end down!), and then I grab them one at a time in a random fashion and drop them in, not in their natural order.

Okay, I can see I need to clarify that statement.

For example, you might drop a pin into position number three first, then one into number one, then one into number two . . . you get the drift.

Then, of course, you load one top pin into each position and one spring on top of that, then snap the retainer back into place. You’re ready to begin!

Tips and Slips

Moving from a, say, 4-pinned lock to a 5-pinned lock wouldn't seem to be that much of a leap, right? Actually, it usually isn't. But simply due to the fact that a 5-pinned Schlage lock is for all intents and purposes the "end game" in your journey (almost all residential Schlage locks have no more than 5 pins), there is a psychological hurdle to get over. Add to that the simple fact that anytime you add one more pin you are multiplying the level of difficulty.

This, of course, is true of any and all lock types, not just Schlage.

With lock loaded and mounted and a new, shiny key blank prepped and (if you choose) inked or smoked, insert and begin. Proceed exactly as you did with less pins in the lock but be mentally prepared to spend more time with this one and, most likely, have just a tad more difficulty getting marks.

The long pins will mark first. If the combination in the lock is relatively "flat", this may not be that pronounced, but if it has a good mix of long and short pin tumblers, it will actually help you. Longer pins bind more easily and they act against the key blank with more leverage than do the shorter pins.

Keep your movements brisk but well controlled, fighting the urge to "really crank it up" just because you know there are more pins to deal with. Rotate the key left, hold it tight in that position (the plug will actually move to the left but only by a degree or two, because necessarily there has to be some play in the parts or the lock would be way too prone to jamming under normal use). Now, holding tension on the key, "jack" it up and down with subtle but firm motion. The extreme leverage created by the long pivot arm of the Vise-Grip pliers puts a great deal of stress on the key blank, so keep that in mind. This up-down jacking motion, combined with going back and forth, left-right-left-right, with your turning tension, is what delivers the marks but it can also rip, bend or tear the key.

Keep an eye on the key between passes. Watch for any signs of tearing or bending. If you see very slight bending, just straighten the key and keep going, but if the bending continues it would be best to scrap the key and start over. Tearing or ripping occurs at the point where the key blade and the key shoulder connect. You'll be able to spot signs of this easily, and when you see any sign of it, STOP! Once this starts, you can be sure the key is about to break right off at the shoulder and if it is fully inserted in the keyway at the moment of breakage, you'll be faced with either prying it out from the front or pushing it out, using a very slim knife blade (or a lock pick, if you have one).

As marks appear, identify those that are most defined and file each of them down just until the mark is *almost* gone. Since you have just started on this key, these initial depths will all be fairly shallow even in the positions where deeper marks have been left. As any given depth increases, make sure to widen the position, using the wider edge of the file (assuming here that you are using a Phippen file).

Also, as the cut is widened in this way, work on building ramps on either wide of the cut. This prevents the key from getting trapped when you insert it, because without ramps the pin tumblers will drop into the cut and will be unable to “ride the ramp” out of it. This is a good way to add unnecessary grief to the project.

Five-pinned locks tend to resist marking more so than even 4-pinned, and for this reason you should take special care to file only those marks that look distinct. It is possible for a tumbler which is already at the shear line to leave very subtle pin-point marks on the key. If you inadvertently deepen a position that is already at the correct depth, you will instantly destroy your chances of success on this key but you may not realize this until all your depths are at maximum and the key has failed to turn the lock. This can ruin your day, but if it happens be aware that you probably aren't the first nor will you be the last to ruin a key this way.

In fact, it is the single most prevalent cause of failure.

To avoid this, as I was saying, be patient and be critical. Marks that deserve deepening are usually quite obvious, so leave any mark that isn't till later.

If after some time you are getting nowhere on a particular setup, I would suggest you revert back to a lock with one or two fewer pin tumblers and reacquaint yourself with what was working for you before. Then, load up a 5-pinned cylinder with three long pin tumblers (not all the same length, but all on the longer side) and two much shorter ones. Put the long pins in the rear of the lock, in positions 3, 4 and 5 . . . leave position 6 empty. If you working with a lock that is drilled for only five pins you can disregard that last suggestion.

Bump It

You've heard about bumping locks, probably. It is an alternate method of lock picking which makes use of the percussion technique. The percussion technique is simply bumping, or rapping, a specially cut key blank in such a way that it causes all the pin stacks in a lock to instantly jump upward.

You can use a similar technique to get marks on a key blank. If you are having difficulty getting the key to mark using your Vise-Grips or other key clamping device, take a minute and do one or two raps on the key with a soft mallet (plastic or rubber head – avoid using a metal mallet or a tack hammer). First, remove the key blank from the Vise-Grip pliers and then reinsert it in the keyway. With your fingers, hold some turning tension on the key. Gently but firmly rap the head of the key with the mallet, making sure you hit the key straight on so as not to force it to bend. Now hold turning tension the opposite direction and do it again.

Check to see if this has delivered any new or better marks. If it works, great, keep using the method until it fails to deliver. Then go back to the conventional method.

Plastic Practice Locks

Recently there has been an glut of this sort of practice lock in online stores. You'll find them for ridiculously low prices (imported) on Amazon and eBay. They are tremendously interesting and they are somewhat helpful in practicing lock picking, but they are useless for the practice of impressioning. Steer well clear of them. Even if you manage to get some marks without cracking the plastic casing (not likely), the experience itself will be so completely different from what occurs when impressioning a solid brass lock cylinder that the danger is more along the lines of learning bad habits.

Good practice locks are also well in supply across the internet. Alternatively, the use of your own household locks for practice is certainly one way to go. Removing a deadbolt from one of the doors in your home and taking it down to a locksmith or the local hardware store to have it converted to a 2- or 3-pinned cylinder is easy and inexpensive.

While I heartily recommend buying practice locks that have the removable top retainers, which to my knowledge are *only* available at LockpickersMall.com, it is only one way to practice.

Learn Rekeying

As you have learned, the Fast Track way employs a progressive method. If you don't purchase the practice locks or the Pin Tumbler Impressioning Kit that has been mentioned here, another way to go is to learn the simple skill of lock rekeying.

Standard locks, such as deadbolts found on most household doors, are easy to rekey. You have to remove the lock from the door and get to the inner cylinder but that requires, usually, only a Phillips screwdriver. The plug must be removed from the shell of the cylinder and to do this without having pin tumblers and springs explode all over the place you need a tool called a plug follower. You can actually make one from a sheet of stiff paper, such as construction paper or even photo paper. It is nothing more than a tube that has the same diameter as the plug in the lock. It is designed to push the plug out of the lock (with the correct key inserted and rotated to 90 degrees either direction).

The plug diameter of almost all locks for household use is exactly .502". A ½" round tube made of stiff paper (cut it into a 4" x 2" rectangle and roll it to create a 4-inch long follower with a ½" diameter) will suffice, or you can buy a length of half-inch round dowel at a hardware store and cut a bunch of them from it. Here is what a conventional plug follower looks like (next page):



Professional followers have a few extra elements molded into them but this is all you really need to rekey a standard pin tumbler lock. There are also special tools to help remove the screw-on rear cap that are found on most lock cylinders but you can get around that, as well, with nothing more than a paper clip (use the same one you used for your wafer depressor).

There are a good many sources for in-depth instruction on lock rekeying but here it is in a nutshell, at least as it relates to the rekeying of KIK style lock cylinders (and also most mortise cylinders). As a reminder, this procedure is only necessary if you do *not* have the specialized practice lock cylinders with the removable top retainer. These instructions pertain to the common KIK style cylinder removed from a standard household Schlage deadbolt.

First, remove the rear cap which screws on and off, along with the tailpiece. Notice that you cannot turn the threaded cap without first depressing the long, spring loaded pin that is keeping it from rotating. Use the end of a straightened paper clip, or any other similar tool, to push straight down on this pin. You will have to hold it down, at least far enough that the end of it does not engage any of the scalloped holes cut in the twist off cap. Hold the pin down while unscrewing the cap. Remove the cap and set it aside along with the tailpiece, the spring loaded pin and the very small spring that is hiding beneath the pin. Be very careful not to lose track of any of these items!

Now insert a working key, and pay strict attention to preventing the plug (the part of the cylinder with the keyway in it) from pulling out the front of lock. It cannot fall out the back because of the widened rim on the front. Rotate the key to either the 9 o'clock or the 3 o'clock position (for those of you who may have never seen an analog clock with hands, this means rotate the plug either direction no more than a quarter of a circle turn).

Now get your plug follower and line it up with the back of the plug. You will be pushing the plug out the front of lock, so you need to line the tool up to allow a straight-on push. As the plug pushes the plug out, it takes its place, preventing any of the top pin or springs from spilling out. Be careful to keep the plug oriented in such a way that the pins, which are sitting right at the shear line thanks to the inserted key, do not fall out. You'll dump them on a rag or towel in a moment but for the time being keep them under control.

Set the lock cylinder with the plug follower in it aside for now. You now have in your hand the lock plug with all 5 pin tumblers in it. Carefully remove the key. I say “carefully” because as you pull it out of the plug it will cause the pin tumblers to dance up and down as they ride along the peaks and valleys of the key. Easy to lose them if you do this quickly. Alternatively, you can keep the key inserted while you empty the tumblers.

Remove the tumblers by dumping them onto a cloth, which will prevent them from rolling off your work surface. Now you can choose two of them for your 2-pinned practice lock. Pick one that is longer than the other, ideally by about half the length of the longer one. Insert these tumblers in positions #1 (first hole from the front of the plug) and #2. Later on you can revise this positioning and spread them out a little, but let's start the easier way.

Now, this step is ultra important. You are going to have to remove three of the top pins and the springs paired with them. The three you must remove are those in positions that do not coincide with positions #1 and #2. You have to dump positions #3, #4 and #5. How is this best done?

It's easy. Pick up the cylinder with the plug follower in it and very carefully pull it out *from the front* of the cylinder, but not all the way. Watch through the back end of the cylinder as you withdraw the follower. You will watch three top pins and their respective springs drop out of the cylinder as the follower clears their positions. STOP pulling the plug follower out when these three positions have been emptied of pins and springs and push the follower back into place. It is now holding the top pins and springs in place that take up positions #1 and #2.

It's time to replace the plug now. You can't do this with the key inserted unless you are using the same two bottom pins, in the same positions, that were originally in the plug. It's likely you are not going to do this, so you will be returning the plug without a key. To do this, make sure the plug enters the cylinder (pushing the plug follower out the back as it goes) with the holes facing either right or left of the 12 o'clock position. If you try to return the plug with the holes in line with the top pins, those in positions #1 and #2 will instantly drop into the empty holes at the back part of the plug, pinning the plug and preventing you from withdrawing it or pushing it further in.

So, keeping those holes at about 9 o'clock or 3 o'clock position, align the back end of the plug with your plug follower and smoothly push the plug into the cylinder, which will at the same time push the follower out the back. Once the plug is *fully inserted*, turn it to the neutral (12 o'clock) position. The top pins and their respective springs will immediately drop into positions #1 and #2 – now resting atop the two bottom pins. You won't be able to rotate the plug unless you either pick the lock (not our job in this exercise) or impression a key with two cuts in positions #1 and #2 that are correct for the two pins you selected.

Your job is not complete, however. You need to replace the threaded end cap and (very important!) the retainer pin and spring to keep the cap from unscrewing. You will not need to replace the tailpiece unless you are returning this cylinder to a lockset so you can reinstall it on a door. In fact, even in that instance, there is no need to replace the tailpiece if you are working with a deadbolt lock – you just won't be able to operate the latch with it.

This is done in the same way it was removed, in reverse order. Use the end of the paper clip to keep the retaining pin down away from the rim of the threaded end cap as you screw it back on. You don't want the cap snug against the plug, however. Screw it on so it is snug, then back it off just a hair and let the retaining pin pop up to engage one of the scalloped holes. This will give the plug enough clearance to rotate.

You are ready to remount the lock cylinder in the deadbolt hardware and put it back on the door. If you rekeyed a stand-alone practice cylinder, you are ready to clamp it firmly in your bench vise or mount it in your FirmHold Impressioning Stand.

Sources

Here is a handy guide that should make sourcing various tools and kits easier. Some of these items are required and they have already been mentioned – I am including them here in the interest of making this list comprehensive – other items can be considered alternatives or accessories that will go a long way to streamlining your path to success.

In some cases I have included a link that will work if you are viewing this ebook on a device that has internet connectivity. The links are current as of the date of this writing, which is August 2, 2016.

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Wafer Lock (Required)

Required in order to follow the Fast Track method described here. Choose a wafer lock that has 4 or 5 wafers and be sure to choose one that has a removable tailpiece so you can clamp it in a bench vise. Cam locks, available practically everywhere, almost always have 5 wafers. Be sure the lock you choose has a unidirectional wafer design. This means all the wafers are on the top or bottom of the keyway (depending on which way the lock is oriented) and *not* staggered with some on the top and others on the bottom.

In our exercise, we chose a cam lock using the very common Y11 key blank. There are other wafer locks beside cam locks that use this key blank, including desk drawer locks. The exact style of the wafer lock is not important as long as it will be easy to clamp between the jaws of a bench vise or mount on a practice board (such as a piece of half-inch thick plywood).

A good candidate in the way of a cam lock:

Prime-Line Products U 11089 Drawer & Cabinet Lock

This cam lock uses Y11 keys and it has a removable cam. Depending upon how you mount this for practicing, you may or may not have to remove the cam. If you do remove it, you will need to fashion a small spacer the same thickness of the cam to take its place. This will prevent the plug within the cam lock from moving outward while you are impressioning a key for it.



Here is an excellent desk drawer wafer lock that you could easily mount to a plywood square, using it as a practice board.

Prime-Line Products U 9947 Drawer & Cabinet Lock



This lock can be secured to the board with a couple of wood screws, but an even better method would be to slightly enlarge the mounting holes and use a couple of bolts and nuts for a much tighter mounting. It also uses the Y11 key.

Key Blanks for Wafer Lock (Required)

If the lock you purchase (or have lying around) uses a Y11 key, you will need to purchase a quantity of blanks of that type. Be sure the lock actually uses this type of key before you buy blanks. If you have chosen a wafer lock that uses a different key profile, you must determine which profile it is and order blanks accordingly. This is one reason I am suggesting Y11 for the lock and for the blanks; they are easy to find and are very common. Unfortunately locks do not generally have any indication on them or on their packaging which key profile is called for. The manager of the key department in a hardware store should know or be able to find out and same with any locksmith.

Order key blanks online if you are unable to get them in a local store. Do a search for “Y11 key blanks” and you are bound to find a good many sources.

Pin Tumbler Practice Lock (Required)

You are going to need a pin tumbler lock to advance in the Fast Track method. You can certainly make use of your household deadbolt locks which have a couple of advantages: You won’t have to buy a lock, and the lock is already mounted to a good, stable surface. I suggest you only do this if your deadbolt lock uses the Schlage keyway because the pin tumblers will definitely be the type that are best for learning key impressioning. Their pointed ends leave much better marks than many other types.

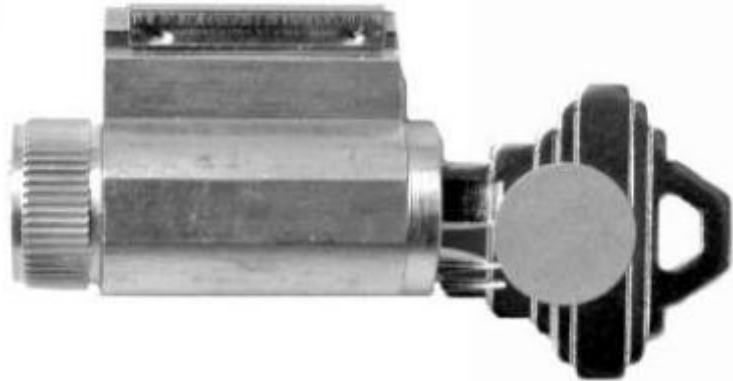
If your locks are Schlage or a store brand using the Schlage keyway, by all means use them! To adhere to the Fast Track method, however, you will have to remove the lock from the door and take it to a locksmith or a hardware store with a lock

department and have it reduced to a 2-pin combination. Later, as you progress, you'll have to take it back again and have more pins replaced until you are eventually practicing with all five pins installed.

I am recommending a deadbolt lock be used because it is just a little harder to impression knobs and levers as they have a lot of movement to them and this makes marks hard to obtain. Deadbolt locks, mounted on the door, are not going to move around on you.

Dedicated Practice Locks (Optional)

The big advantage to these is that, if you buy the right kind, they can be easily rekeyed at any time and you can control how many pins and which ones you use for any given practice session. It makes it super easy to follow the Fast Track method. KIK-style practice locks are actually key-in-knob cylinders (in reality, the same cylinders used in your Schlage deadbolts, as well) and their small size make them easy to handle and easy to mount for practicing. A bench vise is recommended for impressing practice, but a much cooler method, with much more portability, is the FirmHold Impressioning Stand.



Dedicated pin tumbler practice lock with Schlage keyway, 5-pinned, easily rekeyed without the use of special tools

You can purchase dedicated pin tumbler [practice locks at the LockpickersMall.com website](https://www.lockpickersmall.com). Because these cylinders can be so easily rekeyed (you need only a regular slot screwdriver to remove the upper retainer), you will only need one of them! Complete instructions are included.

An alternative is asking your local locksmith if he might have a spare Schlage deadbolt cylinder in one of his parts bins that he might part with for a few bucks. He might even offer it to you without charge since nearly every locksmith in the country has dozens of these (typically) laying around. A mortise cylinder with a Schlage keyway would work, but these are very difficult to clamp down for impressioning unless you buy the FirmHold stand (more on that in a moment).

Key Blanks for Pin Tumbler Lock (Required)

Since we are really pushing the use of the common Schlage keyway, you will need blanks. These are just as easy to find as the Y11 wafer lock blanks. Go to your local hardware store and ask the manager of the locks and keys department for a half dozen SC1 brass key blanks. Do not get nickel plated or aluminum blanks, they won't mark nearly as well as brass blanks! If he or she seems reluctant, try a locksmith shop and be up front with them about wanting to learn how to impression locks.

If all else fails, SC1 blanks are available online from a variety of sources. Buy at least 25 of these, as you are bound to burn through a few as you get better acquainted with impressioning. They are not expensive, especially if you avoid brand name Schlage blanks. Other key manufacturers make blanks that are perfectly fine for our purposes. Brands such as Ilco, Jet and Taylor are well known and have great reputations.

Mounting/Clamping Methods

Fast Track Key Impressioning requires two different lock cylinders in order to start easy with wafer impressioning and advance into pin tumbler impressioning. You need a way to clamp or mount these two very dissimilar locks.

Obviously, if you have either or both of the lock styles required already in your home or business you're all set as they are likely installed already and you can simply use them as is (except that you will want to remove them temporarily to have the number of tumblers reduced). CAUTION --- if you use one of the deadbolts installed in your home or office and have that lock rekeyed to become a 2-pinned lock, be aware that this greatly diminishes the security this lock lends to your home.

Most of you will have to locate suitable lock cylinders, and you will need to plan a way to secure them (bench vise, impressioning stand, etc.).

Mounting Your Cam Lock

If you have acquired a cam lock, here are a few choices for its mounting:

Bench Vise, Plywood panel with hole drilled for the lock or the FirmHold Impressioning Stand.

If you go with the vise, you may wish to remove the cam from the lock in order to assure the plug within the lock shell has room to rotate. You might be able to get away with adjusting the cam orientation by removing it and reattaching it with the cam pointing upward or downward, which should allow enough movement of the plug to preserve your chances of getting good marks. If this does not work, you

will have to remove the cam altogether and replace it with a spacer of some kind that is the same thickness as the cam. Without a spacer, the plug will have too much play forward and backward within the shell and this will stop you in your tracks.

A plywood panel will work, too. I'd suggest at least half-inch plywood or pressboard. Cut a panel large enough to lend some stability so you won't have to clamp it in a vise. If you cut a plywood rectangle 2 feet by 2 feet, it should have enough mass to give the mounted cam lock stability and prevent it from moving. The cam can be left on with this type of mounting, simply maneuver the lock through the hole and then tighten – and I mean really *tighten* – the threaded nut that comes with the lock. Most often there is also a pronged washer that helps the lock stay oriented, so it does not rotate within the round hole.

The FirmHold Stand, which is available through LockpickerMall.com by special order, accepts cam locks.

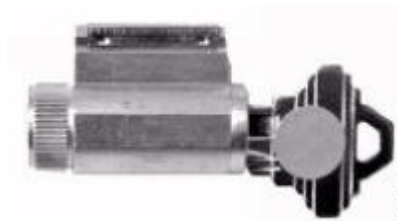
Mounting Your Pin Tumbler Cylinder

These suggestions apply only if you will not be using a deadbolt lock already installed on a door.

If you have purchased or otherwise acquired a KIK-style cylinder, you have the following reasonably easy choices:

Bench vise; FirmHold Impressioning Stand.

A KIK style cylinder looks like this:



If you were to take a typical Schlage deadbolt lock apart, you find a cylinder exactly like this inside the larger round cylinder. KIK cylinders are found, in fact, in the great majority of deadbolt and keyed knob and lever hardware. They will clamp easily between the jaws of a bench vise for impressioning.

If you have purchased a 5-pinned mortise cylinder, your options are less numerous.

In fact, unless you have a commercial glass door that is already set up to accept a mortise cylinder, your only *good* option is the FirmHold stand. This is a mortise cylinder:



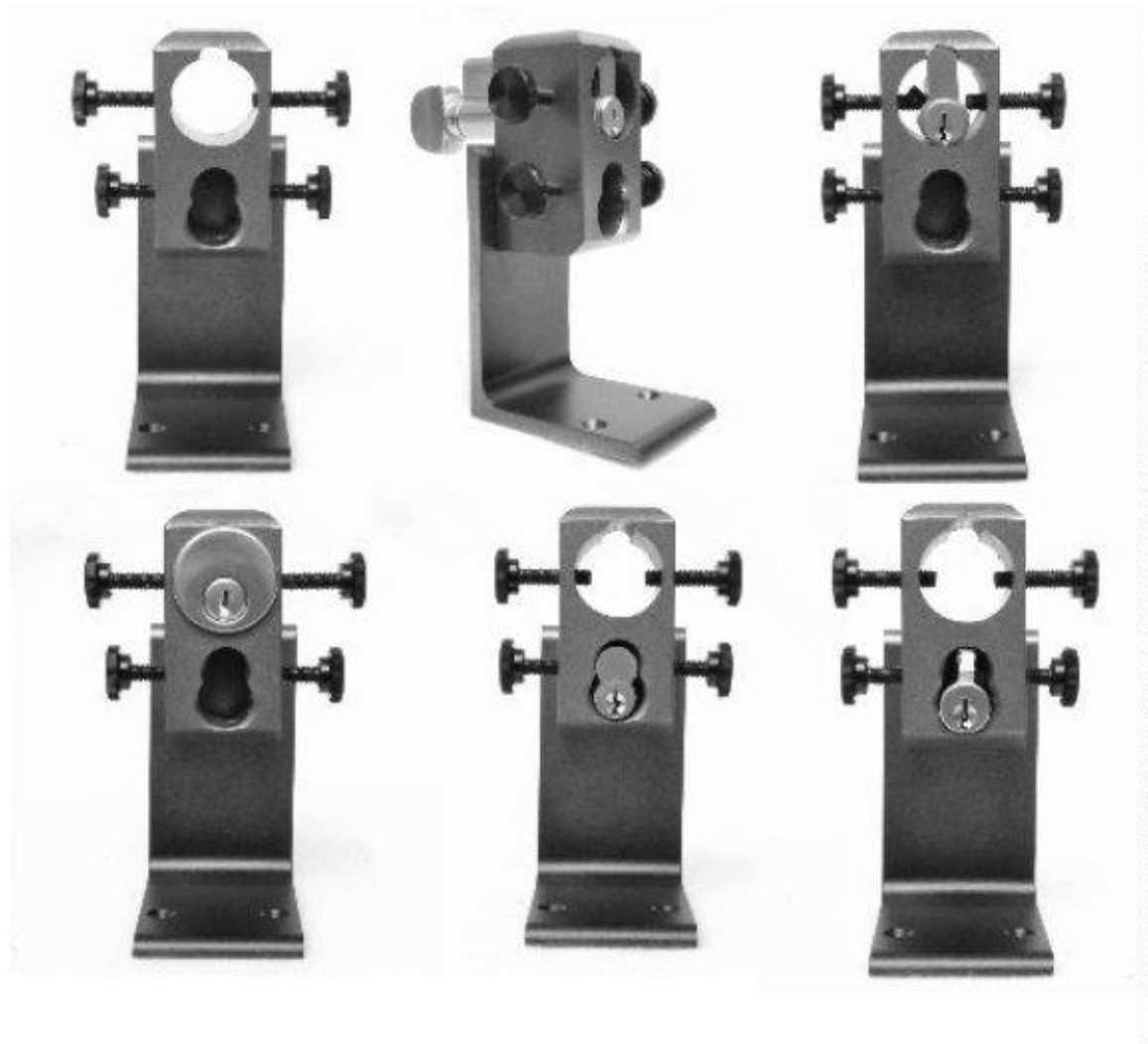
You can try to clamp this in a bench vise but because of the roundness of the body you will have a difficult time keeping the cylinder from moving while trying to obtain marks. In fact, it is more probable that the mortise cylinder will deform or even crack with the kind of clamping pressure that would be needed.

For this reason, I would dissuade you from going with a mortise cylinder, unless you opt for the FirmHold stand, in which case, no problem. Another disadvantage with this choice is that you will not be able to easily rekey it in the same way you can rekey practice cylinders purchased from our website (with the removable top retainer). Like going with a deadbolt lock, you will need to either learn how to rekey pin tumbler locks via the conventional method or truck off to a hardware store or locksmith shop to ask them to help you with that.

FirmHold Impressioning Stand (optional)

This is a great choice for all kinds of lock work, including impressioning cam locks, KIK style practice locks, mortise locks and even rim cylinders. It is also a super lock picking practice stand as it accepts quite a number of different lock cylinder types.

The FirmHold stand is available by special order at this time, please contact George Robertson at Lock Pickers Mall – go to the website at <http://www.LockpickersMall.com> and find the “Contact Us” link at the top of the main page. Give me a call and I can give you current pricing and take your order. At some time in the future, I may be including this stand in our online store. You can see a few images of this stand on the following page.



The FirmHold Impressioning Stand accepts a number of lock cylinder types, such as Euro Profile Cylinders, KIK cylinders, Cam Locks, Mortise cylinders, Rim cylinders, Small Format IC cylinders and Large Format IC cylinders. The base is made of solid aluminum and the block is formed out of solid PVC. When attached to a sturdy work bench with the included wood screws, this stand is rigid and durable enough to absorb the energy used in the process of key impressioning. It is also a fantastic lock picking practice stand.

Impressioning File (required)

Most locksmiths prefer the Pippen file. Pippen is not a brand name, it is a specific file shape, with the cross section of a teardrop. It is perfect for forming key bittings.

The knife edge along one edge of the file works beautifully to start and/or deepen a cut, while the rounder edge (bottom of the teardrop shape) is ideal for widening the cut and keeping the root of the cut smooth. Just tip the file slightly sideways to form 45 degree ramps on both sides of each cut. The most popular Pippen file is made by Grobet, probably the premiere manufacturer of locksmith files. You can purchase these files online from several sources. Here is a link to this item in our Lock Pickers Mall store:

[Grobet Pippen File at LockPickersMall.com](http://LockPickersMall.com)



The medium cut (#2 cut) is good enough for our purposes and it is usually about \$10 less costly than the fine cut, which is a #4.

A warding file is also a good file for impressioning. It is a flat file with a pattern that works well for this purpose. It is available in a number of cut grades, such as fine, medium and course. Here is a photo of a warding file:



Warding file, available at Lock Pickers Mall store and many other online stores.

While I generally do not advocate the use of small, inexpensive hobby files, often sold in sets of 6 to 10 different types, there is a very good set made by HPC that will be helpful if you cannot justify the cost of a Pippen or Warding file. It has the SKU of KFS-6. [Here is a link to the KFS-6 file set.](#)



Magnifier (optional)

I've had great success with one of those little round magnifying glasses that pivots in and out of a leather sheath. It is easy to carry around and it fits easily in your pocket. Do an online search for "SE 5 X 2" Glass Lens Folding Magnifier with Leather Pouch". Other styles that include a tiny LED light are great for this purpose, too.

Impressioning Tool (Required)

My preference for Vise-Grip Pliers® has been mentioned a bunch of times within this Ebook so it should come as no surprise that it is listed first here. Not that the brand itself makes a huge difference – there are now quite a number of tool manufacturers offering the design. In fact, I would suggest you do an online search for this product:

TEKTON 3730 Curved Jaw Locking Pliers Set, 3-Piece

You get a 3-piece set (large, medium and small versions) for right around \$14. The smaller pliers will be just fine for impressioning wafer locks, while the medium or the large size would work best for impression work with pin tumbler locks.

Dedicated key impressioning tools are available. I mention this fact only in the interest of passing along the option. In my opinion, absolutely unnecessary.

LED Inspection Light (Optional)

Optional if you have great eyesight and are young enough to expect that to be persistent for a good many years. It certainly wouldn't hurt to have one handy. Marks can be very subtle and sometimes it helps to use a focused, bright beam for a

better look. Combined with a magnifier you can increase your chances for success so why not include one in your kit?

There are dozens and dozens of candidates out there for this item. I always suggest a LED light because of the brilliance of the beam and the ridiculous economical sense it makes. Get something easy to handle as you will be juggling the light, the key in the Vise-Grip and possibly a magnifier all at once.

Or . . . get the magnifier and light in one handy tool, and wear it on your face. I'm referring to this handy gadget:



LT-2000 Head Spec by ProLok

You have stereo inspection lamps, one on each side, a swiveling magnifying glass and built-in magnifying lenses, resulting in the ability to select from 4 different ranges of magnification. Here is a link to this item at our store: [Head Spec Visor](#).

SUPER Fast Track Key Impressioning

If you don't love the idea of gathering these items one by one, and particularly if you want the absolutely fastest way to learn how to impression keys for both wafer and pin tumbler locks, you will be interested if not delighted to know that LockPickersMall.com has two all-inclusive kits available for purchase.

These kits may or may not be visible on the website. From time to time we add them but there are many periods in which they are not listed. If you don't see them when you visit the website, fireoff an email to us at: moreinformation@lockpickersmall.com

Wafer Lock Impressioning Kit

This kit, designed to be an entry level all-in-one impressioning starter kit, consists of the following items:

- (1) Cam Lock w/5 wafers, 2 working keys
- (12) Y11 brass key blanks
- (1) Grobet Pippen Impression File #2
- (1) Impressioning Tool (locking jaw plier similar to Vise-Grip brand)
- (1) Pocket Magnifier with built-in light
- (1) Impressioning Stand

Pin Tumbler Lock Impressioning Kit

This kit is identical to the wafer lock kit with two differences: The lock cylinder included is a KIK style cylinder with Schlage keyway, drilled for 6 pins; and the key blanks are SC1 brass key blanks (25 in number).

The practice lock arrives pinned with only 2 pin tumblers, but you also get a pack of 10 additional bottom pins and 10 top pins and springs. This enables you to modify the practice lock, adding pins as you progress with your impressioning. Full instructions for doing this are included, and the only extra tools that you will need (which are not included in the kit) are a normal flat blade screwdriver used to pop off the retainer on the lock and a Phillips screwdriver needed to mount your stand to a work surface.

Combined Impressioning Kit

As the name implies, this is a combined kit which includes all of the separate items in the two individual kits. Only one Impressioning Stand is included, however.

Learning to impression keys is one of the last traditional skills still relevant in this fast-paced digital world. Like good old fashioned lock picking, it is a skill that requires patience and dedication. And like lock picking, once mastered it is a source of enjoyment, accomplishment and pride.

It is also great fun! Don't let that part of the process go unappreciated.

August, 2016
G. Robertson
LockPickersMall.com